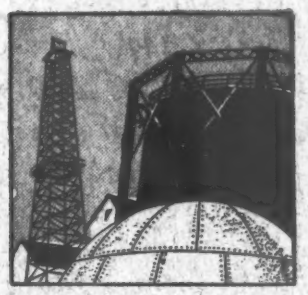
12th A. G. A. Convention Opens Oct. 13

AMERICAN GAS ASSOCIATION MONTHLY



Dynamics of Gas Industry
ALEXANDER FORWARD

Safety from Hazard of Fire with Gas Appliances
F. E. VANDAVEER

A. G. A. Offers Samuel Insull Award for Outstanding Progress

Thousands to Visit Atlantic City to See Gas Exhibit

World Power Conference
A. M. APMANN

A. G. A. To Establish Testing Station on Pacific Coast

The Gas Business Is About 30% Machinery and 70% Folks

October, 1930

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WATER HEATING

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WATER HEATING

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WATER HEATING

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WATER HEATING

New York, Chicago, Pittsburgh, St. Louis have added large volume water heating installations increasing their gas sales millions of feet per year. Why not You?

WATER HEATING

The newest book of the Industrial Gas Series gives the latest and most authoritative information on all phases of this business.

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AMERICAN GAS ASSOCIATION MONTHLY

Allyn B. Tunis, Editor

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OUR OWN WHO'S WHO

Frank Phillips

◆

LXV

◆

FRANK PHILLIPS, founder and president of the Phillips Petroleum Company, Bartlesville, Oklahoma, since its incorporation in 1917, was born in Greeley County, Nebraska, and attended the public schools in Iowa. At an early age he engaged in the banking business in Iowa and Oklahoma. In 1903, Mr. Phillips became interested in the oil and gas business in the Mid-Continent Field and the Phillips Petroleum Company under his leadership has become one of the largest producers and marketers of natural gas in the nation and a leader in the production and marketing of "cylinder" (butane and propane) gas. He is also a director of the American Petroleum Institute, Chatham Phenix National Bank & Trust Co., Chatham Allied Corporation, Standard Insurance Co., North American Aviation Co., Standard Surety & Casualty Co., all of New York; First National Bank, St. Louis, Missouri; Star Aircraft Corporation and First National Bank, Bartlesville, Oklahoma.

AMERICAN GAS ASSOCIATION MONTHLY

VOLUME XII — OCTOBER, 1930 — NUMBER 10

Twelfth Convention to Attract Thousands

THAT big event of the year for the gas man—the annual convention of the American Gas Association—will get under way Monday, October 13, in the huge Municipal Auditorium at Atlantic City, N. J., and continue through Friday, October 17. From all over the United States, many points in Canada, and from some foreign lands will come those who will participate in this twelfth annual meeting, which promises to be one of the outstanding gatherings in the history of the industry.

Attracted by an exceptionally fine program, more than 6,000 representatives from all branches of the industry are expected to take part in the deliberations of this convention. Railroads throughout the country have offered reduced rates for accredited delegates and dependent members of their families.

The final tentative program for the convention has been arranged as follows:

TUESDAY MORNING

October 14, 10 o'clock

First General Session

Room A—Municipal Auditorium

OPENING REMARKS BY THE PRESIDENT
Bernard J. Mullaney, Vice-President, The Peoples Gas Light & Coke Company, Chicago, Ill.

ADDRESS OF WELCOME
Hon. Harry Bacharach, Mayor of Atlantic City, Atlantic City, N. J.

THE ASSOCIATION'S FINANCES
William J. Welsh, President, New York & Richmond Gas Company, Staten Island, N. Y.

The Wednesday night program of the A. G. A. Convention will be broadcast from Station WEAF, New York, at 9 o'clock, Eastern Standard Time, through the courtesy of Halsey Stuart & Company and the National Broadcasting Company.

ANNUAL REPORT OF THE MANAGING DIRECTOR
Alexander Forward, Managing Director, American Gas Association, New York, N. Y.

PRESIDENT'S ADDRESS
Bernard J. Mullaney, Vice-President, The Peoples Gas Light & Coke Company, Chicago, Ill.

REPORT OF GENERAL NOMINATING COMMITTEE
Isaac T. Haddock, Chairman, Vice-President, Cambridge Gas Light Company, Cambridge, Mass.

ELECTION OF OFFICERS

AT WORK IN THE LABORATORY
Nils T. Sellman, Assistant to Vice-President, The Consolidated Gas Co. of N. Y.

TUESDAY EVENING

BALLROOM—MUNICIPAL AUDITORIUM

PRESIDENT'S RECEPTION AND DANCE

NATURAL GAS—THE COLOSSUS OF THE HOUR
Hon. Scott Turner, Director, United States Bureau of Mines, Washington, D. C.

EXECUTIVE SESSION
(Only Company Member Delegates Eligible to Attend.)
Election of Company Members.
Election of Directors.
Election of Nominating Committee.
Election of Committee on Resolutions.

WEDNESDAY MORNING

October 15, 10 o'clock

Second General Session

Room A—Municipal Auditorium

"WHAT MRS. CONSUMER THINKS OF GAS MERCHANDISING POLICY"
Mrs. Christine Frederick, Applecroft Experiment Station, Greenlawn, Long Island, N. Y.

SERVING OUR PUBLIC
Hon. Geo. B. Cortelyou, President, The Consolidated Gas Co. of N. Y., New York, N. Y.

SALES ALLIES
Clifford E. Paige, Vice-President, American Gas Association; Vice-President, Brooklyn Union Gas Company, Brooklyn, N. Y.

COMPETITION AND NEW MARKETS
William H. Hodge, H. M. Byllesby & Company, Chicago, Ill.

WEDNESDAY EVENING

October 15, 8:15 P.M.

Evening Concert

AUDITORIUM BALLROOM

Artists

Jessica Dragonette . . . . . Soprano
John Seagle . . . . . Baritone
Leo O'Rourke . . . . . Tenor
The Cities Service Cavaliers Male Quartet
Lew White . . . . . Organist
B. A. Rolfe and His Orchestra

Organ Recital . . . . . MR. WHITE

Presentation of Medals and Awards . . . . .
BERNARD J. MULLANEY, President

Selections from "The Chocolate Soldier."
B. A. ROLFE AND HIS ORCHESTRA

Betty Co-Ed . . . . . .
THE CITIES SERVICE CAVALIERS

El Relicario . . . . . MISS DRAGONETTE

All Through the Night . . . . . MR. SEAGLE

Maytime . . . . . .
MISS DRAGONETTE and MR. O'ROURKE

L'amour, Toujours L'amour . . . . . .
MISS DRAGONETTE

Greetings . . . . . BERNARD J. MULLANEY

Mrs. Frederick

Mrs. Christine Frederick was a pioneer in introducing and adapting the principles of industrial efficiency over into the home. With the publication of her book *The New Housekeeping*, followed later by her book *Household Engineering*, she established the ideas of kitchen arrangement, motion study and use of mechanical appliances which have been so universally accepted by the American housewife. It is of special importance to those in the gas industry to note that Mrs. Frederick is largely responsible for the development of the Home Service idea. It was she who undertook the work in connection with Peoples Gas Company, Chicago, and laid down some of the lines on which Home Service has since developed.

Taps.....MISS DRAGONETTE
and THE CITIES SERVICE CAVALIERS

Selections from "Mlle. Modiste".....
B. A. ROLFE AND HIS ORCHESTRA

Indian Love Call....
Dark Eyes..... } MISS DRAGONETTE

Strike Up the Band.....
Sylvia .....
It Happened in Monterey } THE CITIES SERVICE CAVALIERS

Un Bel di from "Madam Butterfly" ....
MISS DRAGONETTE

"Gershwinesque" .....
(Medley of George Gershwin Melodies)
MISS DRAGONETTE
THE CITIES SERVICE CAVALIERS
B. A. ROLFE AND HIS ORCHESTRA

Selections from "Babes in Toyland"....
B. A. ROLFE AND HIS ORCHESTRA

Organ Selections.....MR. WHITE

DANCING

THURSDAY MORNING

October 16, 10 o'clock

Third General Session

Room A—Municipal Auditorium

PRESENTATION OF GENERAL COMMITTEE REPORTS

Accident Prevention Committee

John Stilwell, Chairman, The Consolidated Gas Company of New York, New York, N. Y.

Customer Ownership Committee

E. H. Robnett, Chairman, Public Service Electric & Gas Co., Newark, N. J.

Education of Gas Company Employees

A. C. Rissberger, Chairman, Rochester Gas & Electric Corp., Rochester, N. Y.

Rate Fundamentals Committee

F. L. Daily, Chairman, Chicago, Ill.

Rate Structure Committee

T. V. Purcell, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.

REGULATION IN OUR TIME

Hon. J. Paul Kuhn, Illinois Commerce Commission, Springfield, Ill.

COMMON SENSE IN ADVERTISING

Clarence Francis, President, General Food Sales Co., New York, N. Y.

ANOTHER SLANT ON THE GAS BUSINESS

Floyd Gibbons, War Correspondent and Radio "Headline Hunter," New York, N. Y.

CLOSING REMARKS

Henry L. Doherty, President, Henry L. Doherty & Co., New York, N. Y.

THURSDAY EVENING

October 16, 8:30 P.M.

Cabaret and Dance

AUDITORIUM BALLROOM

Dancing will begin at 8.30 and during the evening at 9:30, 10:30 and 11:30 P.M. the following acts will be offered for the entertainment of the guests.

Broadway Revels Revue
Nottage Fantastic Revue
Sons of the Desert
The Famous Hollywood Horse

Floyd Gibbons

Hunting headlines has taken Floyd Gibbons, noted radio lecturer, into every part of the world and into practically every sort of danger. When the Cunarder "Laconia" was torpedoed in mid-Atlantic in 1917 he was on board the stricken vessel. He was wounded in battle in 1918, he has fallen from a height of 7000 feet in the air, has been lost in the Sahara Desert, ambushed in Morocco and made a thrilling escape from the Bolsheviks. He was with the Poles when they revolted, in the Balkans when there was trouble there, through the Sinn Fein rebellions and revolutions in Germany, and in battles with bandits in Mexico. He will give his slant on the gas industry to the Convention delegates.

J. Paul Kuhn

J. Paul Kuhn was admitted to the practice of law in Illinois in 1910; served as Assistant States Attorney of Kane County 1912-1916; City Attorney of Batavia, Illinois, 1913-1921; served as Assistant Commerce Commissioner of Illinois 1921-1927; served as Illinois Commerce Commissioner 1927 to present time. He served as Grand Master of the Grand Lodge of Odd Fellows of Illinois in 1927-1928; since 1910 has practiced law in Batavia and is now a member of the law firm of Kuhn and Benson. In the reorganization of the Illinois Commerce Commission in 1929, Mr. Kuhn was the only member of that Commission who was retained.

Albertina Rasch Dancers
Reilly Family
Adagio Dancers
Dare and Yates

B. A. Rolfe's orchestra, conducted by Reginald Child, will furnish the music for dancing until 1:00 A.M.

Natural Gas Department

MONDAY AFTERNOON

October 13, 2 o'clock

MEETING ROOM B—MUNICIPAL AUDITORIUM

OPENING REMARKS

H. C. Morris, Chairman, Natural Gas Department, American Gas Association, Dallas, Texas.

COMMITTEE REPORTS

Main Technical and Research Committee by the Chairman

H. C. Cooper, Hope Natural Gas Co., Pittsburgh, Pa.

Natural Gas Convention Time and Place Committee by the Chairman

R. W. Gallagher, President, The East Ohio Gas Co., Cleveland, Ohio.

NATURAL GAS FIELDS

R. W. Hendee, Oklahoma Natural Gas Corp., Tulsa, Okla.

LONG DISTANCE TRANSMISSION OF NATURAL GAS

Edgar G. Hill, Ford, Bacon and Davis, Inc., and Southern Natural Gas Corporation.

George I. Rhodes, Ford, Bacon and Davis, Inc.

PIPE LINE LEAKAGE

J. A. Martin, Lone Star Gas Co., Dallas, Texas.

REPORT OF NOMINATING COMMITTEE AND ELECTION OF OFFICERS

DISCUSSION

Clarence Francis

Clarence Francis, president of General Foods Sales Company, Inc., and a vice-president of General Foods Corporation, joined this organization in 1924 as general sales manager when the company was known as the Postum Cereal Company, Inc. The name was changed to Postum Company, Inc., in 1927 and became General Foods Corporation in 1929. Mr. Francis was elected to his present position in 1929. With years of experience in the food business, Mr. Francis is widely known in these circles and to the trade.

Accounting Section

MONDAY MORNING

October 13, 10:30 o'clock

ROOM D—MUNICIPAL AUDITORIUM

Open Meeting on General Office Machine Accounting Plans.

MACHINE ACCOUNTING DEVELOPMENT
Herbert E. Cliff, Public Service Electric & Gas Co., Newark, N. J.

TREASURER'S DEPARTMENT ACCOUNTING
W. J. Seinwerth, Midland Stock Transfer Company, Chicago, Ill.

DISCUSSION

GENERAL OFFICE ACCOUNTING
F. W. Cooper, Public Service Electric & Gas Company, Newark, N. J.
W. A. Doering, Boston Consolidated Gas Company, Boston, Mass.
F. S. Whittaker, Philadelphia Gas Works Company, Philadelphia, Pa.

MONDAY AFTERNOON

October 13, 2 o'clock

ROOM D—MUNICIPAL AUDITORIUM

Discussion of General Office Accounting Systems.

TUESDAY AFTERNOON

October 14, 2 o'clock

ROOM D—MUNICIPAL AUDITORIUM

ADDRESS OF CHAIRMAN
John L. Conover, Public Service Electric & Gas Company, Newark, N. J.
(In this address, reference will be made to the activities of all Accounting Section Committees and the work of those committees not scheduled to appear on the program will be reviewed in detail.)

REPORT OF NOMINATING COMMITTEE
F. H. Patterson, Chairman, Rochester Gas & Electric Corporation, Rochester, N. Y.

SOME NATURAL GAS ACCOUNTING PROBLEMS
F. B. Flahive, Columbia Gas & Electric Corporation, New York City.

DISCUSSION

REPORT OF INSURANCE COMMITTEE
R. T. Kendall, Chairman, Consumers Power Company, Jackson, Mich.

DISCUSSION

THE ACCOUNTANT—THE STATISTICIAN—THE ECONOMIST
Professor Louis Haney, Director of Bureau of Business Research, New York University, New York City.

REPORT OF COMMITTEE ON OFFICE PERSONNEL
A. M. Boyd, Chairman, Philadelphia Electric Company, Philadelphia, Pa.

DISCUSSION

Customer Relations Session

THURSDAY AFTERNOON

October 16, 2 o'clock

ROOM D—MUNICIPAL AUDITORIUM

GOOD AND BAD CUSTOMER RELATIONS PRACTICES
J. D. Houser, Associates, New York City.

CUSTOMER RELATIONS FROM A WOMAN'S VIEWPOINT
Ethel A. Conklin, Consolidated Gas Co., New York City.

DEVELOPMENT OF CUSTOMER RELATIONS IN THE NATURAL GAS FIELD
R. S. Cheatham, Southern California Gas Co., Glendale, Calif.

TRAINING EMPLOYEES FOR GOOD CUSTOMER RELATIONS
H. N. Baker, Gen. Supt., of Customers' Service Department, Westchester Lighting Co.

ADJOURNMENT

Commercial Section

TUESDAY AFTERNOON

October 14, 2:30 o'clock

ROOM B—MUNICIPAL AUDITORIUM

(All papers will be of interest alike to men from natural and manufactured gas territories.)

ADDRESS OF THE CHAIRMAN
George E. Whitwell, Equitable Gas Co., Pittsburgh, Pa.

REPORT OF NOMINATING COMMITTEE, BY CHAIRMAN
N. T. Sellman, Consolidated Gas Co. of N. Y., New York, N. Y.

ELECTION

DOMESTIC LOAD SURVEY—WHAT IT TEACHES THE COMMERCIAL MAN
T. V. Purcell, The Peoples Gas Light & Coke Co., Chicago, Ill.

DISCUSSION

WHAT THE OPERATING DEPARTMENT THINKS OF SALES
Louis Stein, Northern States Power Co., Minneapolis, Minn.

DISCUSSION

WINNING A SALES ARGUMENT
Busse & Hyberg, New York University, New York City.

DISCUSSION

HOUSE HEATING—ECONOMICS OF THE CONVERSION BURNER
H. O. Loebell, Combustion Utilities Corp., New York, N. Y.

WEDNESDAY AFTERNOON

October 15, 2:30 o'clock

ROOM B—MUNICIPAL AUDITORIUM

DEVELOPING NATURAL GAS SALES
R. E. Fisher, Pacific Gas & Electric Co., San Francisco, Calif.

DISCUSSION

UTILITY MERCHANDISING—FRANK VIEWS OF AN OUTSIDER
Irwin D. Wolfe, Secretary, Kaufmann's Department Store, Pittsburgh, Pa.

DISCUSSION

HOME SERVICE, ITS PLACE IN THE GAS INDUSTRY
E. P. Prezzano, Westchester Lighting Co., Mt. Vernon, N. Y.

DISCUSSION

The Five Reilleys—who will appear Thursday Night.

Albertin Rasch Dancers, Featuring Jane Overton—A Convention Entertainment Act

LOAD BUILDING ANALYSIS—THE GUIDE-POST TO SALES DEVELOPMENT
David M. DeBard, Stone & Webster, Inc., Boston, Mass.

Home Service, Luncheon

Shelburne Hotel

Tuesday, October 14, 12:00 Noon

IMPRESSIONS OF HOME SERVICE
George B. Whitwell, Equitable Gas Co., Pittsburgh, Pa.

COOPERATION WITH EXTENSION SERVICE
Miss Florence E. Hall, United States Department of Agriculture, Washington, D. C.

The Wednesday night program of the A. G. A. Convention will be broadcast from Station WEAF, New York, at 9 o'clock, Eastern Standard Time, through the courtesy of Halsey Stuart & Company and the National Broadcasting Company.

Home Service Round Table Discussion

THURSDAY AFTERNOON

October 16, 2 o'clock

CRANE BUILDING

Next door to Auditorium

ADDRESS OF THE CHAIRMAN
Miss Ruth Soule, Brooklyn Union Gas Co., Brooklyn, N. Y.

COOPERATION WITH INDUSTRIES
Miss Ina Lindman, General Foods Corp., New York, N. Y.

HOUSEHEATING AND HOME SERVICE
Miss Margaret Ingels, Carrier-Lyle Corp., Newark, N. J.

WATER HEATING FROM HOME SERVICE STANDPOINT
Miss Leah Anderson, Ruud Manufacturing Co., Pittsburgh, Pa.

REPORTS OF SUBCOMMITTEES

a. Business of Home Service
Miss Hulda Ungericht, Columbus Gas & Fuel Co., Columbus, Ohio.

b. Increasing Percent of Contacts
P. D. Warren, Peoples Gas Light & Coke Co., Chicago, Ill.

c. The New Home Service Manual
Miss Karen Fladoes, Equitable Gas Co., Pittsburgh, Pa.

The Six Demons who will Enliven the Convention Entertainment Program

Industrial Gas Section

WEDNESDAY AFTERNOON

October 15, 2 o'clock

ROOM C—MUNICIPAL AUDITORIUM

ADDRESS OF THE CHAIRMAN
C. C. Krausse, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

REPORT OF THE NOMINATING COMMITTEE
J. P. Leinroth, Chairman, Public Service Electric & Gas Co., Newark, N. J.

ELECTION

THE ECONOMIC POSITION OF GAS FUEL IN THE CORNER BAKERY
T. J. Gallagher, Peoples Gas Light & Coke Co., Chicago, Ill.

THE INDUSTRIAL SALES MANAGER
C. E. Muehlberg, Consolidated Gas Co. of N. Y., New York, N. Y.

RELATIONSHIP BETWEEN INDUSTRIAL GAS DEPARTMENTS AND MANUFACTURERS OF FOOD MACHINERY
R. Elmer Baker, Baker Perkins Co., Inc., Saginaw, Mich.

THURSDAY AFTERNOON

October 16, 2 o'clock

ROOM C—MUNICIPAL AUDITORIUM

INDUSTRIAL SALES AND SERVICE PROBLEMS ENCOUNTERED IN CHANGE-OVER FROM MANUFACTURED TO NATURAL GAS
J. H. Gumz, Pacific Gas & Electric Co., San Francisco, Calif.

CYCLE CONTROL FOR HEAT TREATING FURNACES
L. B. Crossman, Boston Consolidated Gas Co., Boston, Mass.

GAS AS A COMPETITIVE FUEL FOR LARGE SCALE POTTERY BURNING
W. M. Taylor, Ohio Fuel Gas Co., Columbus, Ohio.

INDUSTRIAL GAS
Morse DellPlain, Northern Indiana Public Service Co., Hammond, Ind.

The Nottage Review Promises to be an Attractive Convention Feature

Manufacturers' Section

MONDAY MORNING

October 13, 10:30 o'clock

ROOM C—MUNICIPAL AUDITORIUM

ADDRESS OF THE CHAIRMAN
F. G. Curfman, The Improved Equipment-Russell Engineering Corp., New York, N. Y.

REPORT OF NOMINATING COMMITTEE BY CHAIRMAN
H. Leigh Whitelaw, American Gas Products Corp., New York, N. Y.

ELECTION

STATISTICS THE COMPASS OF THE BUSINESS MAN
Dr. E. Dana Durand, Statistical Assistant to the Secretary of Commerce, Washington, D. C.

NEW MARKETS FOR APPLIANCES AND EQUIPMENT RESULTING FROM THE USE OF BUTANE AND PROPANE
R. W. Thomas, Philfuels Co., Detroit, Mich.

NEW BUSINESS

Publicity and Advertising Section

TUESDAY AFTERNOON

October 14, 2 o'clock

ROOM C—MUNICIPAL AUDITORIUM

ADDRESS OF THE CHAIRMAN
James M. Bennett, Philadelphia Electric Co., Philadelphia, Pa.

REPORT OF NOMINATING COMMITTEE BY CHAIRMAN
Harlow C. Clark, The Public Service Electric & Gas Co., Newark, N. J.

ELECTION

HOW CHANGE-OVER FROM MANUFACTURED TO NATURAL GAS HAS AFFECTED COMPANY ADVERTISING AND PUBLICITY
F. R. Jamison, Public Service Company of Colorado, Denver, Colo.

GAS ADVERTISING'S JOB
Earle Whitehorne, McGraw-Hill Publishing Co., New York, N. Y.

COOPERATIVE ADVERTISING
J. Charles Jordan, Pacific Gas & Electric Co., San Francisco, Calif.

A. G. A. ADVERTISING AND PUBLICITY ACTIVITIES
Keith Clevenger, American Gas Association, New York, N. Y.

ADVERTISING TIE-UPS FOR THE GAS MAN
D. M. Mackie, The Commonwealth & Southern Corp., Jackson, Mich.

ADVERTISING'S RELATION TO GAS SALES PROMOTION
Frank D. Schauer, Equitable Gas Co., Pittsburgh, Pa.

Technical Section

TUESDAY AFTERNOON

October 14, 3 o'clock

ROOM A—MUNICIPAL AUDITORIUM

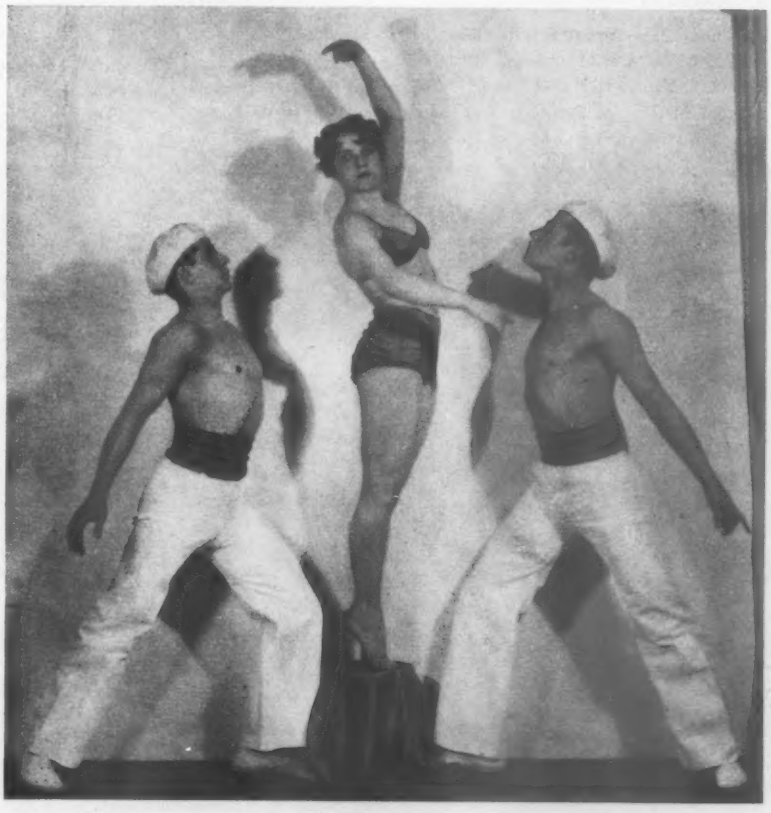
ADDRESS OF THE CHAIRMAN
Bernard V. Pfeiffer, The United Gas Improvement Co., Philadelphia, Pa.

REPORT OF NOMINATING COMMITTEE
H. E. Bates, Chairman, Peoples Gas Light & Coke Co., Chicago, Ill.

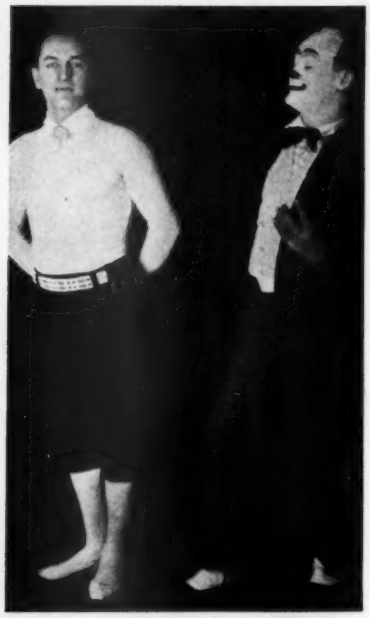
REPORT OF COMMITTEE ON ECONOMIC AND ENGINEERING SURVEY
R. G. Griswold, Chairman, Henry L. Doherty & Co., 60 Wall St., New York, N. Y.

SUBSTITUTION OF NATURAL GAS FOR MANUFACTURED GAS IN PUBLIC UTILITY OPERATIONS
George Wehrle, Supt. of Gas Dept., Public Service Co. of Colo., Denver, Colo.

REPORT OF SUBCOMMITTEE ON COOPERATION WITH THE OIL INDUSTRY ON THE UTILIZATION OF PETROLEUM PRODUCTS
Joseph A. Perry, Chairman, The



Another Bright Spot on the Entertainment Program will be Offered by the Adagi Three



Dan and Yates—Convention Entertainers

United Gas Improvement Co., Philadelphia, Pa.

NATURAL GAS REPLACES OIL GAS IN PACIFIC GAS AND ELECTRIC COMPANY
W. S. Yard, Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif.

WEDNESDAY AFTERNOON
October 15, 3 o'clock
ROOM A—MUNICIPAL AUDITORIUM

REPORT OF COMMITTEE ON DEHYDRATION OF GAS
J. E. Spindle, Chairman, Grand Rapids Gas Light Co., Grand Rapids, Mich.

GAS PIPE LINE FACTORS AFFECTING MINIMUM COSTS
W. R. Kepler, A. O. Smith Corp., Milwaukee, Wis.

THE PHYSICS OF CARBONIZATION
Dr. S. P. Burke, University of West Virginia, Morgantown, W. Va.
Frank V. Parry, Linden, N. J.
Dr. Thos. S. W. Schumann.

THURSDAY AFTERNOON
October 16, 3 o'clock
ROOM A—MUNICIPAL AUDITORIUM

HUMIDITY EFFECTS IN THE IRON OXIDE PROCESS FOR THE REMOVAL OF HYDROGEN SULPHIDE FROM GAS
Prof. W. J. Huff and C. Gordon Milbourne, Johns Hopkins University, Baltimore, Md.

THE HEAVY FUEL OIL IN THE MANUFACTURE OF CARBURETTED WATER GAS
P. T. Dashiell, The Philadelphia Gas Works Co., Philadelphia, Pa.

BRIEF SUMMARY OF REPORTS OF:
Carbonization Committee, Fred Denig.
Water Gas Committee, I. K. Peck.
Distribution Committee, J. H. Braine.
Chemical Committee, S. P. Burke.

Report on Gas Measurement

THE very important first report of the Gas Measurement Committee, resulting from research initiated by the Natural Gas Association of America and continued by the American Gas Association in cooperation with the Bureau of Mines, has been approved by the Executive Board. It has been printed and is now available to the industry. The Board Committee appointed by President Mullaney to act was composed of R. W. Gallagher, Chairman, H. C. Abell, J. D. Creveling, Raymond Cross, Samuel Insull, Jr., J. B. Klumpp and B. V. Pfeiffer. This report contains an authoritative code of instructions for the use of orifice meters covering the proper methods of construction, installation and operation of such meters, the coefficients for use therewith and such modifications of the coefficients as may develop from the use of the meter.

This research was instituted by H. C. Cooper, now vice-chairman of the Natural Gas Department and chairman of its Main Technical and Research Committee. It is regarded as of the utmost value to the industry.

Research in Mixed Gases

The Executive Board at its meeting on September 17 approved in principle the program of the Mixed Gas Research Committee, of which F. C. Weber is chairman, for three years continued research in gas mixtures and their utilization. A feature of this research is utilization of propane and butane gases either alone or when used as carburetting agents with air for augmenting supplies of natural and manufactured gases during heavy send-out seasons. Progress reports on this work are already in the hands of the committee.

Frank Small's White Way Revellers will be Among Convention Entertainment Headliners

Officers of the American Gas Association

Wm. J. Welsh
Treasurer

President B. J. Mullaney

C. E. Paige
Vice-President

H. C. Morris
Chairman
Natural Gas

J. L. Conover
Chairman
Accounting

Alexander Forward
Managing Director

J. M. Bennett
Chairman
Pub. and Advt.

C. C. Krausse
Chairman
Industrial

G. E. Whitwell
Chairman
Commercial

F. G. Curfman
Chairman
Manufacturers

B. F. Pfeiffer
Chairman
Technical

A. G. A. Offers Samuel Insull Award for Outstanding Progress

THE American Gas Association announces the offering of a special annual award to the member gas company of the Association which has made, during the previous calendar year, the most outstanding progress in distinguished public service. This award has been made possible by Samuel Insull, of Chicago, Illinois, and will be known as the Samuel Insull Award for Distinguished Public Service.

The first Samuel Insull Award will be for the calendar year 1931 and will be presented at the 1932 Annual Convention of the American Gas Association. All member companies of the Association in the United States, its possessions, or in Canada, whether large or small, manufactured, natural, or mixed gas, will be invited to submit exhibits under conditions, described substantially below, for consideration of the special committee which will have charge of examining the exhibits and selecting the winning entrant annually.

Purpose of the Award

The purpose of the award is to give official recognition of the gas industry to the outstanding accomplishments of its members in rendering distinguished public service, so as to stimulate the industry's efforts in this direction and inform the industry as to the methods by which these accomplishments have been achieved.

Classification of Company Entrants

In order to make the comparisons of company accomplishments more valid and significant, the following classifications have been established for companies submitting exhibits:

Class A—Companies having 125,000 or more meters.

Class B—Companies having more than 40,000 and less than 125,000 meters.

Class C—Companies having less than 40,000 meters.

The award for the year 1931 will be available to companies in Class A—those having 125,000 or more meters. The award for the year 1932 will be available to companies coming within Class B, and that for 1933 will be available to companies within Class C. In subsequent years the award will be rotated in the same order indicated above.

Nature of the Award

The winning company will receive an engrossed certificate suitable for mounting in the company's offices as public evidence of its company achievements, and in addition will be entitled to designate three members of its personnel who may attend one of the special courses for business executives such as the course in Public Utility Management and Economics offered during the summer months by the Graduate School of Business Administration, Harvard University, or other courses offered by similar institutions. Those individuals designated by the winning company will be entitled to free tuition and expenses during the period of the course at the institution selected.

Factors to be Considered in Selecting the Winning Award

All technical, accounting, sales, financial, and general administrative accomplishments which the company considers as having contributed materially to the distinction of the public service rendered will be considered in detail.

Because the growth of any public utility depends largely upon the measure of its success in serving the public, one important index of the company's achievements in rendering distinguished public service will be the trend of the company's growth, over and above the natural increase in growth due to the increase of population and the business development of the territory served; and more particularly the degree to which the company now is serving its potential market.

Samuel Insull

To facilitate comparison, it will be suggested that each contesting company utilize the following general outline in submitting the various exhibits of its accomplishments:

I. Introduction—general character of territory in which company operates
   1. Population, data, and trends.
   2. Types of industrial and commercial establishments and trends.
   3. Characteristics of domestic, commercial, and industrial markets now served with gas.
   4. Character of local competition.
   5. Any special territorial conditions.

II. General Administration
   1. Skill, initiative, and enterprise shown in formulating company development plan, and achievement thereof.
   2. Public and customer relations and evidence thereof.
   3. Employee relations and evidence thereof.
      a. Activities to improve employee morale as shown by turn-over —sickness—lost time.

4. Stockholder relations (information and service furnished stockholders).
5. Improvement and simplification in company financial structure.
6. Improvement in accounting practices—adequacy and simplicity.
7. Achievements in rate structure to meet local competition and promote growth.

III. Sales Progress
1. Activities producing increase in customers served.
2. Activities producing increase in volume of gas sold.
3. Activities producing increase in territory served.
4. Activities producing increase in gas sales per meter or customer.
5. Pioneering and promotion of sales of newer appliances.
6. Increase in sales of appliances in number and in dollars per customer.
7. Improved customers' service.
8. Cooperation with related trades, resulting in harmonious trade relations, leading in turn to expansion of the utility's service.

IV. Engineering
1. Outstanding advances in efficient and economical production, transmission and distribution of gas (construction and operating accomplishments).
2. Improved reliability of service.
3. Accident prevention activities.
4. Improvements in system capacity and load factors.

In addition entrants will be requested to submit certain statistical data indicated tentatively hereafter so as to make evident the extent of the company's achievements.

It will be seen from the above outline that the Special Committee in charge will be particularly interested in recognizing outstanding accomplishments which have followed the establishment of a well-rounded plan of company development. While the exhibits and data requested should relate particularly to the past year, the committee will consider any data showing trends in previous periods which are necessary to indicate achievements that have reached their fruition during the past year.

Statistical Data to Accompany Applications

The following statistical data will be requested from all applicants:

1. Population residing in territory covered by company's lines, and recent trends.
2. Number of communities served, and recent changes.
3. Total customers served (classified as to domestic, house heating, commercial, and industrial), and recent trends.
4. Total gas sales (classified as to domestic, house heating, commercial, and industrial), and recent trends.
5. Operating revenues—classified as to domestic, house heating, commercial, and industrial.
6. Annual production (classified as to type of gas produced—water gas, retort coal gas, oil gas, coke oven gas, natural gas produced or purchased, and expenses thereof).
7. Residuals—Amounts produced annually and revenues received from residual sales.
8. Recent improvements in system capacity factor and system load factor.

(Wherever possible it is suggested that the annual statistical report forms of the American Gas Association be utilized in supplying this information and other data of a similar nature.)

A formal invitation to all member companies of the American Gas Association to compete for the Samuel Insull Award will be distributed shortly. This invitation will give in final form the award conditions which are outlined tentatively in this article.

E. B. Swanson, New Chief of Division

THE appointment of E. B. Swanson as chief economist of the Division of Petroleum Economics of the United States Bureau of Mines, is announced by Scott Turner, director of the bureau. Mr. Swanson has been serving as acting chief of the division since October, 1928. He is a graduate of the University of Washington and did graduate work in economics at the Robert Brookings Graduate School in Washington, D. C.

Other recent personnel changes in the Petroleum Economics Division include the promotion of G. R. Hopkins from associate petroleum economist to economic analyst and of A. H. Redfield from assistant scientist to associate economic analyst.

The Petroleum Economics Division was established as a unit in the Economics Branch of the Bureau of Mines on January 1, 1926, at which time H. H. Hill, chief engineer of the petroleum and natural gas division of the technologic branch, was designated to serve as Chief of the Petroleum Economics Division during its formative period.

Statement of the Ownership, Management, Circulation, Etc., Required By the Act of Congress of August 24, 1912

Of American Gas Association Monthly published monthly at Brattleboro, Vt., for October 1, 1930.

State of New York, County of New York, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Allyn B. Tunis, who, having been duly sworn according to law, deposes and says that he is the Editor of the American Gas Association Monthly and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Gas Association, Inc., New York, N. Y.; Editor, Allyn B. Tunis, New York, N. Y.; Managing Editor, None; Business Managers, None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

American Gas Association, 420 Lexington Ave., New York, N. Y.; Bernard J. Mullaney, President, 420 Lexington Ave., New York, N. Y.; Clifford E. Paige, Vice-President, 420 Lexington Ave., New York, N. Y.; William J. Welsh, Treasurer, 420 Lexington Ave., New York, N. Y.; Alexander Forward, Managing Director, 420 Lexington Ave., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is . (This information is required from daily publications only.)

ALLYN B. TUNIS, Editor.

Sworn to and subscribed before me this 22d day of September, 1930.

(Seal) LAWRENCE P. BROWN,

Notary Public, New York County,
Clerk's No. 464, Register's No. 2B332.

(My commission expires March 30, 1932.)

A. G. A. to Establish Testing Station on Pacific Coast

BEARING in mind the thought of further raising the high standards maintained by the industry, the American Gas Association has decided to establish an inspection station of its Testing Laboratory on the Pacific Coast, and the Association's Executive Board, on recommendation of the Laboratory Managing Committee, has agreed that this new institution be located at Los Angeles.

The Managing Committee was moved to this action in the belief that gas appliance manufacturers on the Pacific Coast should be afforded, as nearly as practicable, the same class of laboratory testing and inspection service as afforded Eastern concerns by the main Testing Laboratory at Cleveland, Ohio. Important reasons for the creation of the Los Angeles Inspection Station were set forth as follows:

1. Every appliance manufacturer on the Pacific Coast is at least 1,500 miles further from the Testing Laboratory, at Cleveland, than any gas appliance manufacturing concern east of the Rocky Mountains.

2. Approximately 18 per cent of the Laboratory's present patrons are located in the State of California.

3. According to recent statistics, about 18 per cent of the Laboratory's potential patrons also are established in California.

It was further pointed out by members of the committee that freight and express charges on equipment shipped to the Testing Laboratory for approval are more than twice as high for manufacturers on the Pacific Coast as for concerns located in the Eastern States. However, as it is not planned to establish an Approval Testing Station on the Pacific Coast, this item will be of consequence only when it is necessary for appliances to be returned for correction. Such additional expense, it is explained, undoubtedly could be avoided, at least in part, were appliances given a careful inspection before they are shipped to the Laboratory at Cleveland.

Several cities on the Pacific Coast now are enforcing gas appliance ordinances, and other cities are interested in the subject. The American Gas Association plans to have a competent man on the West Coast to advise interested city officials concerning the adoption and enforcement of legislation of this kind. This work has been efficiently handled by A. E. Higgins, field representative of the Commercial Section, but such work forms only a part of his duties and the Pacific Coast only part of the area covered by him.

Will Hold Southwest Natural Gas Sales Meet

THE first Southwest Regional Natural Gas Sales Council will be held in Dallas, Texas, November 13 and 14. Preliminary arrangements for the council were outlined at a meeting held last month at the headquarters of the Natural Gas Department of the American Gas Association, in Dallas. Those attending this session were as follows:

Chester L. May, chairman; J. B. Allison, S. M. Apperson, E. N. Avegno, H. P. Carroll, E. J. Hatzenbuehler, S. A. Lipscomb, N. A. Newton, Elliott G. Peabody, R. E. Sivley, E. J. Stephany, P. C. Tucker, C. B. Wilson, and J. W. West, Jr., secretary of the Commercial Section, American Gas Association, New York.

It was explained that the forthcoming conference is designed to supplement the annual convention meetings of the Commercial Section by affording an opportunity for the sales managers of the companies participating to discuss sales problems in the region affected. It is the aim of the American Gas Association to make the conference regional in every way. All natural gas companies in Louisiana, Texas, Oklahoma, Arkansas, Kansas and New Mexico and adjacent States will be invited to participate. The council program now is being prepared.

The Wednesday night program of the A. G. A. Convention will be broadcast from Station WEAF, New York, at 9 o'clock, Eastern Standard Time, through the courtesy of Halsey Stuart & Company and the National Broadcasting Company.

McCarter Medal Awards

RECENT awards of McCarter medals made by the American Gas Association for life-saving by the prone pressure method, have been announced as follows:

J. T. Cook

H. Carter

Joseph T. Cook, of the Public Service Electric and Gas Co., who saved the life of Anthony Bandel, of Willington, N. J., who was overcome by gas while at work as a painter at Paterson, N. J.

G. Bouton

Herbert Carter, of the Public Service Electric & Gas Co., for heroic attempt to save the life of Ferdinand Ulmer, who had been overcome by gas at his home in West Orange, N. J.

Granville Bouton, also an employee of the Public Service Electric & Gas Co., who resuscitated Herman Stier, who was asphyxiated while repairing gas lines in a ditch at Guttenberg.

Dynamics of Gas Industry*

The American Gas Association is committed to a policy of effective conservation of natural gas, and its Natural Gas Department is working out a plan to be reported at our Convention. We have the full cooperation of the Bureau of Mines and will seek cooperation in other directions. California has led the country in its notable effort toward conservation of this vital resource. A tremendous responsibility in this connection rests upon the industry.—Alexander Forward.

Alexander Forward

By Alexander Forward

Managing Director
American Gas Association

I AM profoundly gratified for the privilege of addressing for the first time the annual convention of the gas fraternity on the Pacific Coast. This is a pleasure which I have had to forego in other years because of the proximity of your meeting to that of the American Gas Association.

For this opportunity I am indebted to the fact that we live in a dynamic and not a static age, since the achievements of a Langley and a Wright of a generation ago and of a Lindbergh of our own time represent the response to the universal demand for greater facility of communication.

The development of trans-continental air transportation inevitably means accelerated development and larger prosperity to the Pacific Coast for it brings you within increasingly closer contact with the rest of the world. Also, by the annihilation of time it brings the gas fraternity of the East and the West into certain closer cooperation.

It is a pleasure to note the part played by our industry in the future I predict for this area. The utilization of natural gas is one of the best advertisements you have. In fact, it advertises itself to the traveller by air in this region from Kansas City west, the safety of aviation is enhanced and the beauties of the view heightened by the absence of smoke due to the well nigh universal use of natural gas.

If one talks at all about the gas industry, it is necessary to talk about its dynamics. The one outstanding characteristic of our industry today is change. We showed remarkable adaptation when electricity came along and took our lighting load. There were plenty of Jobs who thought we were done. Instead of giving up, we sought new uses for our product and a few years witnessed the complete transformation of our utilization from a 100 per cent lighting load to a 94 per cent heating load. Yet the increase of manufactured gas sales during the past ten years has amounted to about 500 per cent. The natural gas output of the country in 1929 was approximately 250 per cent of the output of 1922, seven years before, while the increase in 1929 over 1928 was better than 20 per cent.

In our time new problems arise; changes in living habits of the people, the drift from individual homes to the apartment house, the habit to travel induced by the automobile, and competition with other fuels, have brought about a halt in the rate of our growth in domestic consumption. Our increases in output in the last few years have been mainly due to the development of industrial uses and in house heating. Are we meeting these changes? Are we dynamic?

It is very evident that no industry in our time can continue to exist, much less prosper and grow, unless it adds something substantial to the material comforts and the mental satisfactions of life. That is what we do.

There are indications that the pendulum is swinging in the opposite direction. The night club has played out, since people will no longer be robbed in order to be bored. President Hoover's recent sponsorship of a movement towards the building of individual homes was a result of a survey made for him which indicates to his mind that apartment house building has been overdone, and the popularity of the radio and the enormous increase in the sale of home games such as ping pong, parcheesi and others, brings him to the conviction that people are once again about to cultivate that good old institution, the home. Perhaps the emancipated women of the country, after a natural period of exhilaration, are realizing that their abandonment of home life is giving up their best bet for influence over those they care for and upon the individual and national life. The sudden complete change in the attitude and dress and behavior of young people, with their excessive dignity and their disapproval of the fast habits of their parents, is another straw indicating the direction of the wind.

What I mean to say is that the gas industry has at all time shown its adaptability to changing conditions. With the loss of gas lighting, we produced cooking, and with the reduction in the cooking load in the average home we produced other domestic uses and then we went out and adapted gas to thousands of uses in industry, now amounting to 27 per cent of our entire output. We were not like Mr. Squeers

There was a man who had a clock
(His name was Mr. Squeers)
And every day he wound it up
For more than forty years;
But when, at last, an eight-day clock
It was found out to be,
A madder man than Mr. Squeers
You'd never wish to see.

* Address delivered before Pacific Coast Gas Association at Pasadena, Calif., Sept. 9, 1930.

The gas industry has another attribute besides adaptability, and that is stability. Our securities are in high favor in the financial markets of the world and the foremost writers about securities who were a few years ago bearish on our business do not hesitate to put us in the front rank of desirable investments today. During the past year of business depression we are one of the few industries of the country holding its own, which is saying a great deal for a time when almost nobody has done anything at all.

Notwithstanding certain agitations in certain localities it is my opinion that state regulation of public utilities is on a better basis than ever. There is a more general recognition of the problems inherent on all sides of this question and the demagogue gets little attention from the public.

Not long ago I heard Governor Emmerson of Illinois say:

"No utility can thrive unless it has the good will of its public and no community can prosper unless it is adequately and uninterruptedly served by its utilities. There is a better understanding of these facts today than ever before and consequently there is less friction between the utilities and the public and a greater friendliness of the public toward the utilities. Good will and good service go together and each is dependent upon the other. You cannot give good service if your public is constantly hampering you with restrictions which prevent development and if you do not give good service you cannot have good will."

The dynamic nature of the gas industry, with the contribution it makes to the material comfort and the commercial prosperity of our time is the best guarantee so far as we are concerned against any spread of government ownership of public services. Once let the dead cold hand of government and bureaueratic control grasp the essential services of the nation and we will witness no more growth and no more dynamics.

One more quotation from a responsible source, being part of a recent radio address by our President, B. J. Mullaney:

"Gas and electricity are not competitors. Both are simply different forms of energy, each with a distinctive field: gas for heat; electricity for light and power. And taking them as the Energy Twins, gas is still much the larger. By the engineering formula for translating one kind of energy into terms of another, the combined manufactured and natural gas production of last year in the United States was the energy equivalent to 835,300,000,000 kilowatt hours of electricity, or more than nine times the country's total production of electricity. And yet there are thorough-going scientists and hard-headed business men who will tell you that the gas industry is still but an infant.

"Vastly increased use of gas beyond anything now known is forecast by the trends of the times. Such increase is in line especially with conservation trends, with social and economic trends toward elimination of smoke, elimination of traffic-congesting transportation of raw fuels and their residues, elimination of the waste in valuable by-products lost when fuels are burned in the raw state. For gas is now generally accepted as the ideal fuel for every purpose to which it can be economically applied—clean, convenient, efficient, flexible, controllable to the fraction of a single degree of temperature. And as research and invention expand the opportunities for its economic use, the industrial forecasters see more clearly a time when as one has put it, 'the use of solid fuel will become as obsolete as candle light.'

"Reflections like that hold the substance as well as the color of real romance. For, regardless of the importance natural gas now has or may have, the gas industry seems linked indissolubly with coal. The natural gas supply will doubtless outlast any of us now living. But coal is nature's great repository of primordial energy now but crudely utilized. And the conversion of coal into gas and collateral products is apparently the open road to unlocking this vast treasure house."

Of course it goes almost without saying that our ability to adapt ourselves to changing conditions is due to dynamics in the individuals in the industry who are responsible for its usefulness and its continued growth.

There has recently been notable development in the use of butane and allied gases in small communities heretofore without gas service. This helps the industry, and be it remembered that where a gas company does not take this business, somebody else will.—Alexander Forward.

Notable change is being wrought by the rapid and spectacular extension of natural gas service, staggering the imagination. Transmission lines covering distances which were regarded as economically impossible a year or so ago have been completed and are now in operation, and still larger lines are now actually under construction. Hundreds of millions of dollars are being invested in pipe lines and compressor stations in seeking outlets for the tremendous supply of natural gas which has become available. No one can tell how far this movement will go. The temporary nature of the reserves so far as engineering skill can determine, would indicate that a degree of stabilization will be reached not very far in the future. Still, the dream of a short year ago has become a fact of today and he is rash indeed who would attempt to prophesy what the coming months will bring forth.

You will be interested, I think, in the following statement recently prepared for us by the Bureau of Mines, although the facts are probably well known to all of you. The statement as a whole, covering the country, is confidential.

"Natural gas production in California during 1929 is reported by Claude C. Brown, state gas administrator, to have reached a total of 558 billion cubic feet, of which 309 billion was utilized and 249 billion wasted. Domestic and commercial sales totalled 50 billion cubic feet, as compared with 38 billion during 1928; industrial and wholesale sales reached 60 billion feet, as compared with approximately 52 billion in the preceding year, while field and refinery requirements were slightly higher than in 1928.

"Production from the deep zones in the Long Beach and Santa Fe Springs fields in the Los Angeles Basin and developments in the Kettleman Hills and Buttonwillow fields in the San Joaquin Valley have added to the gas supply. Pipeline delivery of gas to the San Francisco Bay region has extended the range of consumption, while conservation policies adopted by the operating companies and as a result of the recently adopted law will tend to reduce the quantity of gas wasted. Although no estimates appear to be available regarding the gas reserves in California, the data on production coupled with knowledge as to the thickness of California sands indicate that an adequate supply will be available for some years to come. Projects are reported to be under consideration for the extension of gas lines north into Oregon and Washington to provide additional outlets for California gas. While such a project may be consummated, it does not appear at present that California gas deliveries will be extended outside of the Coastal zone."

The American Gas Association is committed to a policy of effective conservation of natural gas, and its Natural Gas Department is working out a plan to be reported at our convention next month. We have the full cooperation of the Bureau of Mines and will seek cooperation in other directions. California has led the country in its notable effort toward conservation of this vital resource. A tremendous responsibility in this connection rests upon the gas industry. We will meet it. We are dynamic.

Now, this talk must seem more or less elementary to you for if there is one outstanding factor in our business on the Pacific Coast it is that you are dynamic. You have been leaders in thought and action in many directions. The Pacific Coast Gas Association, admirably organized and under able leadership, has set the pace for the other gas associations throughout the country in many directions. Still, a review of what has been done throughout the country to meet the changing conditions (for be it remembered that every industry which is playing an important part in the developments of the hour experiences great changes) may be of interest.

In the Testing Laboratory in Cleveland, erected, equipped and operated by the American Gas Association, dedicated to promote and develop the gas industry to the end that it may serve to the fullest possible extent the best interests of the public, we have tested thousands of appliances and approved very many types. The standing of this Laboratory as the final word on this subject is generally recognized in all places of authority and it is now almost impossible to sell such appliance unless it bears the Laboratory's Seal of Approval.—Alexander Forward.

To meet the needs of the times the American Gas Association is engaged in doing everything possible through the loyal cooperation of the collective minds of the industry to equip our sales people with all of the knowledge and all of the suggestions and all of the successfully tried plans for advancing the sales of our product. From one end of this country to the other our Field Representative, Captain Higgins, known to all of you, has preached the doctrine that we are today in an age of youth, not a youth of years but a youth of feeling and that we must talk gas in terms of service, of convenience, of comfort, of labor saving and step saving, of more time to enjoy good things of life, of less drudgery in maintaining home comforts and conveniences, of the satisfaction of living, and of how gas can do all these things better than any other agency. The Association's Course in Domestic Gas Salesmanship, which has been completed by 2,500 officers and employees of our companies and is now being studied by 850 more, has met with absolutely unanimous approval from all who have expressed themselves. The Industrial Gas Sales Course is fairly launched and is being received with enthusiasm. The sales management study is well on the way. A course in public contacts is being prepared, applicable to employees in whatever branch of the industry, and designed so that the public will understand why we are in business and what we can do for them. It is a pleasure to make acknowledgment of the cooperation we have received on the Coast in making these educational efforts of the maximum value to the industry.

The pioneer souls who thought and talked and worked salesmanship 20 years ago are, like the progressive natural gas engineers of a year ago, seeing their dreams come true.

All of these undertakings are preceded by the most careful surveys of existing situations and are tested by the light of the best thought and the best experience before they are put into practice.

Be it remembered that the central thought in these efforts is that in selling appliances we are selling not the commodity but the service.

Should you ask me the next important field to be fought and conquered by our industry I would reply that it is in the manufacture of cold. We should be the principal factor in cooling the office buildings, the stores, the factories, the hotels, the homes, the foods in the groceries and meat markets. Much is being done; more will be done. I advise a careful reading of the article by Floyd Parsons in an early issue of the *Saturday Evening Post*.

Time would fail you and fail me to tell of the splendid work for the industry now being accomplished through the careful planned efforts of the Sections of the Association—the publicity work which has developed so satisfactorily, the sales stimulation program of the commercial people, the invaluable aid now given the industry through the executives by the accountants, the sales engineering studies and other activities of the industrial gas men, the home service work and the promotion of other contacts with women, and the splendid support of our manufacturers who are doing far more for the industry than they ever get credit for.

Another sign of the times is the certain knowledge to which we have arrived of the necessity for complete cooperation with other agencies who can assist in the sales of appliances using gas. Of course, I mean the dealers, the plumbers, the hardware and department stores and the mail order houses. There can be no question that the activities of dealers in electrical appliances are to a very large degree responsible for the growth of that sister industry. We cannot afford to have these elements fight us, except in friendly and open competition, and it is all to our benefit if we have them in friendly mood. Nor will they help us from any feeling of sentiment. The only way to get cooperation with other trades is to make it possible for them to profit and to help them succeed.

As we all know, there has recently been notable development in the use of butane and allied gases in small communities heretofore without gas service. This helps the industry, and be it remembered that where a gas company does not take on this business, somebody else will.

While preserving our inheritance of the highest technical skill, which may well be the envy of other industries, a portion of this experience and energy is now directed in the fields of research. The American Gas Association's program of development of efficient gas burning industrial appliances which witnessed such notable strides during the administration of your Mr. Macbeth as president is progressing satisfactorily in able hands and the money invested has already been returned in the production of appliances and in the ascertainment of scientific facts for the advancement of our business. We are studying and investing the industry's money through the Association, in mixtures of gases of all kinds, best methods of pipe jointing, the best practice in the prevention of pipe corrosion, the characteristics and performance of domestic gas burning appliances.

In the Testing Laboratory in Cleveland, erected, equipped and operated by the Association, dedicated to promote and develop the gas industry to the end that it may serve to the fullest possible extent the best interests of the public, we have tested thousands of appliances and approved very many types. The standing of this Laboratory as the final word on this subject is generally recognized in all places of authority and it is now almost impossible to sell such an appliance unless it bears the Laboratory's Seal of Approval.

Making domestic appliances absolutely safe in operation for their prospective life is not the sole result of the Laboratory's work. As our vice-president, Clifford Paige, so pertinently points out, the compliance with our standards in the building of these appliances "has operated to reduce the maintenance of service costs in every gas company which makes any pretense of satisfying customers."

The American Gas Association proceeds upon a Five-Year Program of Association Activities most carefully worked out in 1926 by a group of foremost executives and by the Executive Board. Four years of that program have now been completed and the Board has determined to create another committee to review the plan and to bring in its recommendations for a further program covering a definite number of years.

We have the basic and essential product. We have the appliances of high standards of efficiency and as safe as the combined brains of the industry and its medical, technical and governmental advisers can make them, as evidenced by the Laboratory's Seal of Approval. These appliances exist in greater variety and are more attractive in appearance than at any previous time. We have a greater number and more efficient industrial appliances than heretofore. We have the financial backing which comes from stability. We have brains and training and the power of individual and collective growth.

For the man or woman who correctly sizes up the signs of the times and sells his ideas to the boss, the future in the gas industry offers as much reward as in any line of human endeavor.

A. G. A. Managing Director Welcomed By Committee

F. H. Bivens

F. S. Wade

Addison B. Day

A. B. Macbeth

When Alexander Forward, managing director of the American Gas Association, landed from his plane at the Glendale, Cal., Air Terminal, September 7, he was greeted by a reception committee which included Frank H. Bivens, president of the Pacific Coast Gas Association; Addison B. Day, president of the Los Angeles Gas & Electric Corporation; A. B. Macbeth, president of the Southern California Gas Company, and F. S. Wade, president of Southern Counties Gas Company.

R. Earl Fisher Heads Pacific Association

SAN FRANCISCO will be the scene of the next annual gathering of the Pacific Coast Gas Association, it was decided at the thirty-seventh annual convention in Pasadena last month. The selection of San Francisco was in the nature of a tribute to the association's newly elected president, R. Earl Fisher, of the Pacific Gas and Electric Co., who lives in that city.

Competing with ten other women gas concern employees, Miss Edith Laing of the San Diego Gas and Electric Company was presented with $50 for giving the best three-minute speech on "Gas in the Home." In the men's speaking contest first place went to Paul Kuntz of the Los Angeles Gas and Electric Corporation, who spoke on "Gas in Industry."

James L. Stone, of the Spokane Gas and Fuel Co., Spokane, Wash., was elected vice-president.

Safety from the Hazard of Fire With Gas Appliances

By Dr. F. E. Vandaveer

Supervisor A. G. A. Testing Laboratory
Cleveland, Ohio

Dr. Vandaveer

SAFETY is being brought to the forefront in every phase of life. "Safety First" is the slogan used everywhere. Great industries are maintaining men on their staff whose sole function is to look after safety matters, and accident prevention among their employees. Health commissions of cities and states are organized to wage war on unsafe practices in industries and homes. Traffic departments are maintained in every large city to protect the pedestrian and the careful driver. Magazines devoted to safety engineering are being published. Everywhere emphasis is being placed on the protection of life and property. The gas industry as a whole is vitally interested, and is participating in this forward movement. As a matter of fact, safety was one of the prime motives resulting in establishment of the American Gas Association's Testing Laboratory.

Safety, as it applies to all aspects of gas business, is entirely too extensive a subject for a short article, consequently, it is proposed to limit this paper to matters pertaining to safety from the hazard of fire as it relates to the use of gas appliances.

Every committee appointed by the American Gas Association to draft approval requirements for domestic gas appliances, has included a requirement which strictly limits the temperature rise to which the adjacent walls and floor may be subjected by a gas burning appliance. This test is specified to determine whether an appliance as ordinarily installed represents a fire hazard; it anticipates extreme operating conditions, and in addition provides a considerable margin of safety.

Unless the appliance is correct and the proper precautionary measures are taken, fire hazard may be created by gas appliances in a number of ways. Consequently, adequate protection must be provided. Fire may be caused first by unburned gas escaping into the room and later becoming ignited; second, by explosion within the appliance itself causing flames to flare out and ignite inflammable material; third, by inflammable material such as clothes, papers or rugs being placed too close to an incorrectly constructed heater; fourth, by an improperly designed appliance being set too close to an inflammable wall or floor.

The first possibility is being rapidly taken care of in several different ways. On gas-fired boilers and furnaces, safety pilots are now being used to a large extent. The function of a safety pilot is to shut off the main gas supply if the pilot should go out, or if the gas supply is accidentally turned off and then turned on again. Such a device prevents the escape of unburned gas except within the time limit necessary for the safety valve to function, which may vary from a few seconds to a few minutes. The safety pilot is coming into general use for water heaters. Gas ranges are now being made with safety devices controlling the gas supply to the oven and top burners. If the gas is accidentally turned on, a constant burning pilot will ignite any of the burners, thus preventing the escape of unburned gas. If the pilot is out, the safety device automatically shuts off the gas and it cannot be turned on until the safety pilot is lighted. Further than this, safety gas cocks are being provided for gas ranges. There are several different types being manufactured, among the more common of which are those requiring the operator either to push a button at the same time the handle is turned, or lift or push down while turning the cock handle. Gas refrigerators have thermostatic controls on burners to shut off all gas should the flame be extinguished. On all these devices the construction is such that the gas cock cannot readily be opened unintentionally or turned by small children.

What has been said concerning protection from the escape of unburned gas is also applicable to the prevention of explosions. If unburned gas is prevented from escaping, explosions will not occur. A further precaution is being taken in some localities, and considerable research has been completed by the U. S. Bureau of Mines for the American Gas Association for the purpose of developing an effective irritant or disagreeable odor or vapor such as ethyl mercaptan to be added to the gas supply so that the escape of a minute quantity of gas may be readily detected. In addition, appliances such as boilers, furnaces, water heaters, and range ovens are provided with explosion relief doors to relieve an explosion without seriously damaging the appliance or property.

Fig. 1
Showing a gas range being tested for fire hazard

Guards to prevent inflammable material from coming in contact with heated elements and becoming ignited are provided on all correctly designed and Laboratory approved room heaters. Heaters of the enclosed type such as boilers, furnaces, water heaters, ovens of gas ranges, solid top ranges, cabinet heaters and radiators, present no hazard in this respect except to the extent mentioned later. Heaters of the open type, such as radiant heaters, are required to have a dress guard attached in front to protect clothing or other inflammable material from coming in contact with the radiants or flame. This guard must be so constructed and located that bond paper placed against it will not become ignited within a period of ten seconds when the heater is operating at its normal rating.

The fourth possibility of fire being caused by an appliance installed too close to inflammable material with the result that ignition or charring occurs, is one which is always present and adequate protection in the construction of the appliance itself must be provided. To determine whether an appliance is hazardous, the accuracy of methods of measurement and the various factors involved in this measurement, as well as the factor of safety provided is the purpose of the remainder of this paper.

A. G. A. Approval Requirements for all appliances state that the maximum temperature rise above room temperature shall not exceed 90° F. at points 6 inches from the back and sides of the appliance or on the floor beneath it when the appliance has been operating on one hour at a gas pressure of 50 per cent above normal. The temperature rise on the floor within three feet of heaters of the radiant type is also limited to 90° F. Whether this temperature rise is a safe limit or too rigid a requirement depends on the ignition and scorching temperatures of inflammable materials from which walls and floors are constructed. It was impossible to obtain this data for such substances as wood, wallpaper, cloth and linoleum, except in one instance a handbook gives the

ignition temperature of dry pine wood as 800° F., and of dry oak wood, 900° F. No information on the scorching temperatures of these substances could be found, but it is evident that this temperature would be less than the ignition temperature, and therefore would be the limiting factor in an allowable temperature rise. Even though a fire might not be caused by excessive heating it certainly would not be permissible to scorch or discolor the wall or floor materials.

To determine the scorching temperatures of various wall and floor material and cloth which might come in contact with hot surfaces, wood coated with ordinary paint, shavings of white pine wood, paper, newspaper, oil cloth, silk, wool, linen and muslin, were placed in a gas range oven thermostatically controlled and temperatures registered by a recording pyrometer. The oven was a free air circulating type and very closely simulated open air conditions. The results obtained are shown in the table below:

wall or floor temperature of 190° F. would be allowed. Even this maximum temperature permissible is 70° F. below the discoloration temperature of the materials tested. Under the condition of test specified, with the appliance six inches from the wall, there is a safety factor, for discoloration of from 1.37 to 1.62, depending upon the room temperature. Since the materials tested did not ignite even at 500° F. there is a safety factor from the hazard of fire of 2.6 to 3.1 depending somewhat, of course, on the temperature of the room.

Measurement of the Temperature of the Surface of a Wall

Temperatures on a surface are usually measured by thermometers or thermocouples, the latter being the better method where it is available. Thermocouples are not appreciably affected by radiant heat, whereas, thermometers are influenced to some extent. It was found that the length and diameter of the mercury bulb of a thermometer, 15/32" to 24/32". Indicated temperatures vary considerably, depending upon the size of mercury bulb used. For example, when the thermometer, having a 15/32" long mercury bulb, was substituted for one having a 24/32" bulb, the diameters being the same, an increase in temperature of 13° F. was noted. This difference was apparently due to the fact that a greater percentage of the total mercury in the bulb was exposed in the latter instance. When thermometers of equal length mercury bulbs and 3/64" difference in diameter were interchanged, a variation of 6° F. was noted, the larger diameter bulb thermometer registering the higher temperature. Thermometers of equal diameter and equal length mercury bulb will give practically the same temperature readings. As a result of this investigation, it was decided to use thermometers with mercury bulbs of 9/16" to 11/16" in length, and with a diameter of 10/64" to 12/64".

Having adopted a certain size thermometer, it was necessary then

TABLE I

EFFECT OF TEMPERATURE ON VARIOUS MATERIALS TO PRODUCE SCORCHING AS OBTAINED BY ABOVE METHOD

Temp. °F.	*White Pine*	*Heavy Cotton Cloth*	*White Paper*	*Newspaper*	*Oil Cloth*	*Painted Wood*	*Silk*	*Wool*	*Linen*	*Muslin*
240	None	None	None	None	None	Slight softening	None	None	None	None
262	None	None	None	None	None	Slight softening	Slight Brown	None	None	None
290	None	None	None	None	Tinged	Pimpled	Noticeable Brown	Noticeable Tint	None	None
300	None	None	None	None	Tinged	Pimpled			None	None
340	Tinged Brown		Very light Brown	Tinged	Light Brown	Melted & Pimpled			None	
350	Tinged	Light Brown	Very light Brown	Slight browning	Light Brown	Melted & Pimpled			None	
375	Light Brown		Very light Brown	Light Brown	Brown	Melted & Pimpled			Very light Brown	
400	Brown	Brown	Dark Brown	Brown	Very Brown	Melted & Pimpled				
450	Brown	Dark Brown	Black	Dark Brown	Dark Brown					
500	Dark Brown	Black	Charred	Charred	Black					

This table indicates that the lowest temperature for discoloration or noticeable softening of any of the materials tested begins at approximately 260° F. and this temperature therefore should be the maximum to which they should be subjected. Of the materials ordinarily used for wall or floors, oil cloth shows the lowest temperature of discoloration at 290° F. but none of them ignited even at 500° F.

Room temperature is usually maintained at 70° F. which would permit a wall or floor temperature according to the approval requirements of 160° F. Under abnormal summer temperature of 100° F., a

were important factors for obtaining comparative results.

Ordinary chemical thermometers, as they are supplied, have mercury bulbs varying in diameter from 9/64" to 14/64", and in length, from

to determine whether this thermometer would indicate true wall temperature. To make this comparison, thermocouples were attached to thermometers so the end of the thermometer and themocouple junc-

tion were very close together, and the readings were taken over a range of 80° F. to 218° F. An average of these readings showed that the thermometers read 9.8° F. higher than the thermocouples. The difference may be attributed to the thermometers being influenced to a greater extent by radiant heat than the thermocouples. Consequently, when thermometers are used, a tolerance of 10 per cent is allowed. It is applied by subtracting 10 per cent of the highest temperatures obtained from that temperature. If the resulting figure is less than the 90° F. rise above room temperature, the appliance is approved. For example, if 90° F. above room temperature gives 160° F., a temperature of 177° F. would be allowed, since 177 minus 17.7, or 10 per cent of the highest reading, equals 159.3° F.

Time For Thermal Equilibrium Between Wall and Appliance

It is further essential that the time specified for taking readings be long enough to permit thermal equilibrium between the appliance and the wall. The time specified in all the A. G. A. Approval Requirements is one hour. As the following tables show, this limit is sufficient time for all practical purposes to allow equilibrium to be reached.

Similar results were obtained on a radiant heater. The maximum variation in temperature at the end of one hour and at the end of 1½ hours was 7° F., and the average variation was approximately 5° F.

Effect of Thermometers Flush With Board, Protruding ⅛" and ¼"

If the thermometers are placed in the fire hazard board, flush with the surface, protruding ⅛", or ¼", it might logically be expected that a marked difference would be obtained, but such is not the case, as the adjoining table indicates.

Considering the fact that these tests were run on different days, it may be said that the average maximum variation of 4° F. under the three conditions is so slight as to make very little difference whether the thermometers were placed flush, ⅛" or ¼". In order to standardize conditions as much as possible, it was decided to place the thermometers during all the fire hazard tests so they would project ⅛".

Effect of Location of an Appliance Upon Wall Temperatures

Although it is recommended, where possible, that appliances be installed 6 inches or more from walls and floors, oftentimes they are set much closer. To determine how great a hazard results when a gas range is placed too close to a wall, a range was selected which had failed on the fire hazard test and tested at distances of 4 inches and 2 inches.

TABLE II

SHOWING THE CHANGE IN TEMPERATURE OBTAINED AFTER ONE AND TWO HOURS OPERATION OF A GAS RANGE

(a) Temperatures ° F. on wall at back of range after operation for one hour.

100	116	123	125	125	113	100	93
105	120	134	140	145	130	114	98
105	118	124	144	158	139	128	103
94	104	113	110	142	138	120	101
84	92	100	104	116	116	106	94
80	83	83	91	95	92	88	85
78	82	84	86	85	84	81	80

(b) Temperatures on wall at back of same range after operation for two hours.

103	119	126	129	131	118	103	96
108	123	138	145	151	134	118	103
109	123	130	148	162	143	130	105
95	108	115	112	145	142	120	103
88	86	104	108	120	118	110	95
84	85	87	94	96	94	91	85
82	85	87	88	88	87	84	82

At the end of the second hour, temperatures had increased only slightly, the maximum increase being 6° F., and the average about 3° F.

TABLE III

Showing temperatures obtained on wall at back of range with thermometers flush with board, protruding ⅛" and ¼"

Thermometers flush with board				
119	140	155	152	131
118	148	172	162	140
121	146	165	161	141
111	118	140	140	122
103	104	108	109	101
95	95	96	98	99
91	96	98	100	98
Thermometers projecting ⅛"				
121	144	159	149	130
121	149	171	158	137
126	148	173	156	138
114	122	141	138	118
99	105	110	108	98
97	93	97	95	91
94	93	99	96	91
Thermometers projecting ¼"				
120	143	149	149	123
124	148	172	162	132
123	147	161	154	133
113	125	139	135	117
102	106	109	107	101
95	95	97	95	90
91	95	97	95	92

With the range set 6 inches from the wall, there were two points of failure, one reaching 188° F., and the other 187° F. These two points reached 206° F., and 198° F. when the test was applied with the range 4 inches from the wall. In addition, four other points of failure at 183, 181, 188 and 187 occurred. When the same range was tested 2 inches from the wall, the first two points of failure reached 226° F. and 204° F., and seven additional points of failure were noted, all of them being lower than the two latter readings. These results indicate that the wall temperature increases rapidly as the range is set closer to it, but even one which just fails to meet the requirements at 6 inches, still has a factor of safety at a distance of 2 inches from the wall.

Effect of Increase in Gas Pressure on Wall Temperature

All fire hazard tests are run either at 1.25 or 1.5 times normal operating pressure which simulates the most extreme operating conditions to which appliances are subjected. Gas range ovens are the only exceptions and they are maintained at 550° F. for one hour. At the increased pressures, approximately 12 to 23 per cent more gas is being burned than under normal operation when the

Fig. 2
A radiant heater set-up for determination of fire hazard

burners are operating full capacity. Higher wall temperatures would therefore be expected. A comparative run made with a gas range indicated that the top burner section heated the wall at the hottest point 8° higher at 1.25 normal pressure than at normal. A similar test on a space heater at 1.5 normal pressure increased the temperature at six points at the back of the heater an average of 10°. These results indicate that there is an increase in temperature as the gas pressure increases, but that it is not as pronounced as might be expected.

Effect of Room Temperature on Final Readings

It might appear, as the requirements are written, that an appliance would pass the fire hazard test easier in the summer time with a room temperature of 100° F. than in the winter when the temperature of the room fell below 70° F. By actual test it has been demonstrated that room temperatures do not materially affect results. Comparative tests made on a gas range with room temperatures of 52° F. and 73° F., gave results showing the temperature difference, as measured on the fire hazard board, to be practically the same in both cases, the final temperature in the second test averaging approximately 21° F. higher than in the first test. Another range was tested at room temperatures of 78° F. and 87° F., and the temperature difference between room temperature and the temperature of the board was practically the same in both cases. These tests demonstrate that room temperature has a negligible effect on the results, and therefore, regardless of the time of year the test is made, comparable results, within allowable experimental errors, may be obtained.

Effect of Different Floor Material on Temperatures Obtained on the Floor

In conducting tests on radiant heaters to obtain the temperature rises on the floor, it was found that different floor materials gave widely varying results. Accordingly, tests were conducted using the same heater under identical conditions placed on concrete, asphalt composition, wood and linoleum floors. Temperature readings obtained on concrete and asphalt composition floors were in very close agreement. On the linoleum floor, temperatures averaged approximately 8° higher than on concrete; and on wood they averaged practically 22° F. higher than on concrete.

Since the majority of floors in homes are of wood, this material was selected as the standard for all fire hazard tests. According to the requirements, "The floor shall be made of one-inch tongue and groove oak flooring, painted with clear varnish, and laid over a one-inch white pine flooring with one thickness of building paper between." In this way, floor temperatures obtained during the approval test are as high as would be obtained under any ordinary condition in service.

Summary and Conclusions

1. Accomplishments of manufacturers of gas appliances in providing accessories to insure the safe use of gas have been discussed, as well as research made for the purpose of determining the degree of severity of the Association's Approval Requirements.

2. To prevent scorching or discoloration, an appliance should never heat a wall above 260° F.

3. Thermometers projecting 1/8" from a fire hazard board will indicate wall temperatures with an accuracy of 10 per cent, providing the mercury bulb length is limited between 9/16" to 11/16", and the diameters from 10/64" to 12/64".

4. Thermal equilibrium is attained within one hour's time with the appliance located six inches from the fire hazard board.

(Continued on page 466)

World Power Conference

"Berlin in June"

The prospectus was intriguing, and there must have been many gas men who sighed longingly practised "Wie gehts," then hitched the belt tighter and stolidly went back to the tasks that kept the paddles turning in the station meters. But this account of parts of the World Power Conference comes from one who sought the experience of other peoples and other methods. And found them.

A. M. Apmann

By A. M. Apmann

American Gas Association Representative

BERLIN in June." A city of gaiety and beauty. Gaiety tempered with soberness at the rising number of unemployed leading to a Cabinet Crisis. Beauty of the organic whole, not of individual masterpieces, but of many well arranged, harmonious units in settings to give the best impression.

Into this city of gaiety and beauty came thousands devoted to the god "Power." They streamed through the palaces and parks, to the lakes and rivers, to the stores and hotels, sat listening to his henchmen in the Opera and Auditorium and went viewing him in Gas Works, Water Works, Electric Generating Stations and Manufacturing establishments. They listened as he spoke through space with more fellows in San Francisco and heard his head men speak from London and West Orange. Sat and listened at a late dinner as twilight deepened, while our friends ate lunch thousands of miles beyond the setting sun.

"Berlin in June." Even the sun, source of all Power, could not see enough of it, for in these latitudes twilight only bows to the deepness of night at 9:45 P.M. and the long white fingers of early dawn are reaching out again at 2:30 A.M.

For Power was set in the midst of beauty. The meeting places at Kroll Opera House and the State Opera House with their own garden terrace and tea dancing. The buildings themselves with their beauty of simplicity rather than adornment. The receptions at the Palace in the Zoo Park. The Palace of Marble reflecting the Victorian influence to an extent. Here the German Government tendered their good wishes to the delegates with music and dancing and food and wine, and the experts had their informal evenings.

And Power had its great social evening amid beauty at the Sport Palace, Berlin's Madison Square Garden, but having the bare utility of the steel trusses of New York's Garden covered by finished plaster and paint. Gaiety and beauty filled that evening from the moment that the schoolgirls entered singing their simple songs and waving their handkerchiefs through the various divertissements to the end. Beauty of music came from the schoolgirls and the trained men's chorus of great antiquity, the Berliner Liedertafel. But there was also beauty of form for the eye in the calisthenics and dancing of the younger men and women of the physical culture classes. And gaiety came with the parade and folk dancing of the 500 people of about 18 racial groups making up the present German Empire, ending in a wild demonstration when the Bavarians paraded off with their countryman, the 86 year old President of the Conference, Oscar Van Müller.

But aside from the beauty of the meeting places, the days were spent in work. The many papers, almost 450, were not presented in full, but divided by subject and given at 34 sectional meetings. A general reporter gave an abstract of each paper, then summarized them with particular reference to similarities and differences in the practise in the various countries and proposed topics for general discussion. Somewhere the General Reports on Gas Markets and High Temperature Distillation will be printed. A system of telephonic communication and previous translation made it possible to hear the reporter direct or listen to the translation in English or French.

To have been present at each of the thirty-four sectional meetings would have been impossible as three meetings were being held simultaneously. The best that could be done was to select from the program the most interesting and go there. In this way, the world trend of utility service could be followed.

A peculiar separation between Old and New World is seen in the papers presented under the Grouping "Electricity in Household and Agriculture" in that the emphasis from America was laid on strictly domestic and small power uses on farms while the European and Japanese papers dwelt on the heating aspects of electric utilization. The careful attention paid to fertilizing has been followed by electric heating of forcing beds, particularly in the colder Scandanavian countries. The discussion of this group was focused on the effect of electric cooking on peak load, the electrification of dairies and desirability of electric heating for forcing beds.

Much interesting data was presented on these questions, almost all bearing on European conditions. With the prevalence of dinner at mid-day, the addition of a cooking load to the lighting load is found to be non-existent. The speakers discussing electrification of dairies and hot bed were in many cases diametrically opposed and any desired

conclusion, favorable or otherwise, could be drawn.

The Session on Electricity in Crafts and Industry developed along five general lines of which application to heating processes was perhaps the least stressed. Much attention was paid to increasing power loads, industrial lighting, welding, cleaning of gases and electrochemistry. The questions serving as nuclei for discussion were hypothetical and theoretical, with the result that discussion was rather limited in scope.

The results, however, of Electric Hotel and Restaurant Ranges of which 270 are installed in Germany with a connected load of 76,000 kilowatts show an annual consumption of from 50,000 to 500,000 kw.hr. annual consumption which is said to be all off peak power.

The storage bake ovens of which approximately 400 are operating, give an annual return of 30,000 to 50,000 kw.hr. for Cafes and Cafeterias and about double that for bakery installations. The loading is at the rate of 60 Kg. per square meter (12¼ lb. per sq.ft.).

The meeting devoted to "Economic Problems of High Temperature Distillation" was as animated as could be found. Devoted as it was to Gas Manufacture and Purification it summarized much of the practice throughout the World emphasizing the problems of most particular interest to each country. The papers emanating from Great Britain were most complete from the economic and engineering side of such problems as the effect of fluctuating credits for by-products on cost of gas, benzole extraction, the disposal of liquor effluents from gas making, producer gas practice and the relation of the gas utilities to the ammonia industry. Dr. Ludwig, the General Reporter, proposed a list of topics for discussion which served to bring forth many important points, much of it centering on the paper advocating the use of oxygen for the gasification process. The economics of benzol extraction was discussed at great length as a function of prices of coal, coke and benzol and also as being related to the prices of water gas, mixed gas and benzol.

The value of blending coals for gas making was found to be not only a space saver but also contributed to higher yield of gas and coke and saved considerable money. The question proposed dealing with elimination of the poisonous constituents was not only ill chosen but poorly discussed. The important question of utilization of even a non-poisonous gas was not considered but it was assumed that the products from a gas without poisonous constituents would also be harmless.

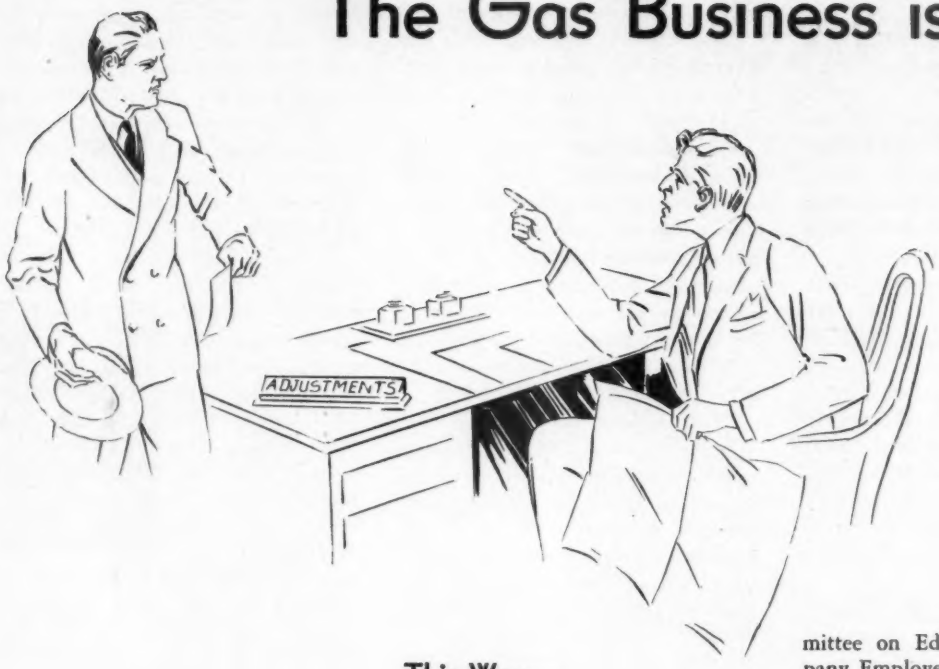
"Gas Markets" included the most important group of papers relating to the industry being devoted to discussion of those factors concerned with the commercial phases of the business. Statistics, data and analyses of the industry in the different countries showed that the future prospects for gas sales were even better than the past history. In this group the papers sponsored by the American Gas Association were the most impressive and among the General Reporters it was the concensus of opinion that the paper on extension of Gas Service and Progress of Rate Making most nearly represented the ideals towards which the Conference was striving. This paper was ably supported by papers prepared by Mr. Ramsburg on Importance of the By-Product Coke Oven to Gas Industry in the United States, The Economic Cycle of Gaseous Fuels by Mr. Bates and a more detailed paper on Hydrocarbon Gas as Power in the United States by Dr. Egloff which included data on the increasing use of bottled gases. But the A. G. A. was not alone in authoritative information for much valuable information came from the Argentine, France, Germany and Great Britain. In the discussions which followed, the value of individual meter pressure regulators, house regulators (for use where several meters are installed) and district governors received much attention because of the present trend toward increasing distribution pressures to overcome small house piping, thereby making possible increased gas sales without inconveniencing the customer. Comparative results on airplanes using competitive fuels indicated that in Europe also, gas is unequalled for producing quality products most economically.

The climax of each days' meetings was the "General Address" consisting of one or more popular talks on scientific subjects. The first day will be long remembered for as the President said: "On this day we heard Einstein," Einstein, small, almost frail appearing amid the giants of power. But how spellbound they sat as he quietly and precisely sketched the history of the theories of relativity. The next day was "French Hour" at which Prof. Dr. D. Serruys spoke on "The New Forms of Rationalism." Then the American Hour with Ambassador Sackett speaking of power regulation, and H. Foster Bain on "The Place of Minerals in a Power Sustained World" and finally the typically American touch, the talkies with T. A. Edison recounting the "Birth of the Incandescent Lamp."

The following day, Dr. Ing. Oskar Oliven showed the ground work which had been laid for a "European Super Power System." The Italian Hour on Friday summarized the very close relations between "Electricity and Power" given by Prof. Ing. G. Vallauri. Almost as much interest in theoretical subject as displayed for Einstein was shown Sir A. S. Eddington whose discourse on "Subatomic Energy" opened new lines of thought for power as a result of the work of this great English scientist. The final General Address was given by Dr. A. F. Enström whose contribution to the Swedish Hour was a paper on "Machine Power as a Factor of Culture."

Interest in the Conference was never lost, the attendance at the final sessions were as enthusiastic and large as at the openings and there can be no doubt that everyone came away feeling well repaid for the time and effort given to be a part of it. When the Executive Committee chose Berlin as the meeting place it was indeed a happy decision, for after being in Berlin in June, one can appreciate the optimistic Berlin slogan *"Jeder einmal in Berlin."*

The Gas Business is About %



This Way—

YES, 30 per cent machinery and 70 per cent folks!

Something new and unique in the way of a definition, isn't it? Yet somehow it strikes home and rather smacks of common-sense, doesn't it?

When you come to think of it, anybody who has the money can buy the machinery. But it takes more than money or machinery or franchises or pretty display windows to make a going, prosperous gas company. It takes folks—the right kind of folks, *thinking* the right way—trained to their various duties, fitting in their various jobs, each doing the thing he or she has to do with at least reasonable efficiency, skillfulness, ambition and intelligence.

Everything is subject to change—everything but human nature. Human nature is the same today as it was in the time of Babylon. And it will be the same a thousand years from now. Imagine the almost endless variety of stirring subjects for a person to think or talk about in this wonderful world of ours today! Yet, the most important of them all is now, as always, humanity itself—human nature!

Is it any wonder, then, that at the root of the public's appraisal of the gas business one thing looms larger than all else? That one thing is and will continue to be the *people* in the gas business. Company success, in the final analysis, is not measured by the efficiency of machinery—not by the masses. It is measured by the efficiency, courtesy, thoughtfulness and kindly consideration demonstrated by the rank and file of men and women employees in daily contact with the gas-using public. These humans, these employees, *are* the company to the masses.

Please the customer and he's a friend. Offend him and his friendship vanishes. It's at the contact points that the decision is made. Improve the contacts? By all means, yes. But how? By telling employees to be courteous? By preaching—exhorting? No. It has been tried and it doesn't work.

Something more is needed—some means of inculcating *correct contact habits* in employees. Rules, regulations and the common run of friendly advice and suggestion won't do it. This is because employees are just human enough to think for themselves. But suppose you can get them to think in terms of the company's viewpoint and the customer's viewpoint. That would be ideal, wouldn't it? How can it be done?

The answer to this question and the practical, workable "how to do it" constitute the very heart of a program of Employee-Customer Relations now placed at the disposal of the industry by the American Gas Association through its Committee on Education of Gas Company Employees. In a nutshell, the purpose of the program is to im-

The Six Units of [Y]our Custo[m]er Rela[tions]

The program comprises six units or booklets, as follows:

WHAT THE CUSTOMER WANTS

In this unit the buying public is considered. What people buy, why they buy, how they judge business concerns, what makes them angry, what makes them pleased. The utility business is considered from the standpoint of the customer.

THE GAS COMPANY'S BUSINESS

The second unit of the course considers the business from the standpoint of the Company, emphasizing the fact that this is not vitally different from the interest of the public. The cost of manufacture, the State regulation of rates, the elements of service for which the public pays, the capital investment, the responsibilities of the business are discussed briefly.

% Machinery and 70% Folks!

prove employee-customer relations by getting employees to think—by making them analyze customer contacts and plan their procedure so that correct methods of dealing with customers become a fixed habit.

This is not merely "another" project, nor does it give expression to the pet ideas or hobbies advanced by theorists, faddists and others who are a bit cracked on the subject of public relations. A responsible Association committee has supervised its preparation, and the Association's Executive Board has given its approval.

or This?

ourse in Employee-elations

TACTS

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MAKING THE BUSINESS GROW

The necessity of making the business keep pace with its opportunities for wider service is the central theme of this unit. Emphasis is laid upon the value of the expanding service as one without which industrial civilization can't afford to get along. To this end there is special stress on getting rid of one's own standard of price levels and substituting therefor the varying price levels of various types of customers.

EVERY EMPLOYEE A SALESMAN

The final unit of the course builds its argument about the need for the salesmanship viewpoint in all the work of contact employees. The service of every worker in the company is part of what the customer buys. How best to make the public realize the value of that part of the bargain can well occupy the attention of employees.

The program is practical. There is nothing of speculation, guesswork or theory in it. Moreover, it has nothing to do with the building up of an elaborate educational organization. It can be put into effect immediately, and at a cost insignificant to the benefits certain to accrue from its successful application.

Most important of all, however, is the character of material offered for study by contact employees. Every case, every suggestion, every illustration is based on actual conditions prevailing today in gas companies. The entire program arises from an extensive experience in talking with customers in various cities, in observing thousands of contact employees in their work, and in holding conferences with various groups of these employees to get their viewpoints in the solution of contact problems. Nothing like it has been offered before in this country. It is new. It is sound. It is basic.

The cultivation of successful contacts is a problem in technique. "It is not the thing you do, but the way in which you do it that counts." The growing recognition of this fact has led to the preparation of this program, specifically designed for cashiers, meter readers, fitters, repair men, collectors, complaint adjusters, telephone operators, salespeople—for all, in fact, who have to deal with the public, and from whom the public forms its impression of the company.

The program takes the form of a course of six booklets, issued one at a time at four-week intervals. These treat entirely of fundamental principles of dealing with the public, with emphasis consistently placed upon the "what-to-do" problem in practical situations. Questions for review accompany each chapter of every unit. Furthermore, each unit calls for one paper on which the individual taking the course answers questions and indicates how a contact situation described should have been handled. The papers will be corrected and returned to the individuals sending them in for review.

But there is another and highly significant feature to this well-rounded program. Provision is made

(Continued on page 466)

Baltimore Gas Extensions Improve Good Public Service

Douglas Burnett

By DOUGLAS BURNETT
In The Baltimore Gas and Electric News

THE initiative and vision which prompted Rembrandt Peale to use gas for lighting "Peale's Museum" and to translate that experiment into practical application for widespread use through the incorporation in 1816 of the Consolidated Gas, Electric Light and Power Company of Baltimore, Baltimore, Md., the first gas company in America, is just as active in 1930 in the public service work of this Company. Romance and spirit pervade the efforts and accomplishments of our daily work, pioneering into new fields engages our time and attention, scientific studies go hand in hand with business analyses, education is eagerly sought, new opportunities for practical expansion of service are discovered, new methods of work and of insuring growth are evolved, and the Company remains in the forefront of the progressive work of the gas industry.

A vice-president of a company serving in the growing State of California told me that the president of that company and he often speak with high regard and appreciation for the work of our Company, and asked for several copies of recent yearbooks, so that they could review our recent progress.

One of the leading gas engineers of England corresponds with our Company and on several occasions has spoken highly of the progress of our work in his addresses before gas engineering associations in his country.

Baltimore or any other city will best grow in service and importance, in business and prosperity, when the outlying country roundabout is fertile in its resources, prosperous and progressive. Within recent years much has been done by our company contributing to this end.

One development of practical ways and means of expanding the work of our Company which may interest the reader is embraced in the topic "Major Gas Extensions." In this phrase is embodied five years of our own experience with new methods of distributing gas into outlying territories, expanding the field for the sale of gas and bringing the service into areas heretofore impracticable to be supplied; providing a method capable of large future expansion consequent upon the growth of the community, and aiding in such growth.

The company has long held a high record for good service and low leakage from its system of mains. The so-called low pressure method of gas distribution was consistently followed in our city work and immediate suburbs, with the result that mains of ample capacity have always been the rule, with generous sizes of pipe and always a high minimum size of pipe. The distribution system has grown with the demands of our built-up territory.

The advent of the automobile, the splendid system of state roads, the scenic attractions of a beautiful countryside, the splendid strategic location of our city, with great opportunities for growth and expansion, the successive increases of the area of our city, the tendency of people to live in the suburbs where living conditions are more attractive than in the city, have all been impelling reasons for means for greater flexibility in the making of gas extensions through a larger area.

The water barriers lying to the south of Baltimore, represented by the northwest harbor and the middle branch of the Patapsco River, together with that part of the river which empties into the harbor, made it difficult to supply on an economic or business basis the communities of Brooklyn, Fairfield and Curtis Bay, all lying within the 1918 city boundary. The investment cost of a gas extension to supply that vicinity, which had been prohibitive on the basis of extending with the then existing low-pressure system, was in 1925 so reduced by the use of smaller sizes of pipe in connection with a medium pressure system, as to enable the company to undertake to supply the 1,200 customers who were then expected to use the service. This was the first of the major gas extensions.

From a 12-inch main out of Bayard Street Station, supplying gas at higher than usual pressure, about sixteen miles of main were extended from Westport via a land route, crossing the Patapsco River near Pumphrey, Anne Arundel County, using 10-inch and 8-inch pipe, to Brooklyn and Curtis Bay. Several records were at once broken, in amount of main laid, resulting in economy in cost of work. There was no special compressor station, but the 3- or 4-pound pressure required district governors. Work was started March 19, 1925; in June, 459 customers were in service, and by November, the 1,200 expected customers were in service. In June, 1930, the customers increased to 3,169, and the total amount of main had increased by the end of 1929 on this extension to 26.9 miles of 4-, 6-, 8- and 10-inch pipe, including a 4-mile branch to Linthicum Heights. The 36,369,600 cubic feet of gas used in the first twelve months of service increased to 102,076,200 cubic feet in the twelve months ending June, 1930. In addition, one industrial customer is supplied with several million cubic feet each month. Construction work was

found in the 1925 part of the work to be unusually easy, and one day's digging by trenching machine measured up 1,500 feet plus another 100 feet on another street.

The Essex Major Extension followed in 1927 for the supply of 869 customers. Here was an attractive community, three miles beyond the eastern boundary of Baltimore, on the east side of Bear Creek, containing numerous small homes on a well-developed rectangle of streets accessible by good transportation facilities to an industrial section of the city and suburbs. Lying beyond a large undeveloped area, a gas main extension would be largely unproductive, and it would be some time before the intervening growth would bring gas to Essex.

From an existing 12-inch main, at Youngstown Avenue and Carnegie Avenue, 11.3 miles of main were extended via Eastern Avenue, crossing Bear Creek, using 12-inch and 10-inch pipe, to Essex. There was no special compressor station nor change in the method of governor operation. The extension cost per customer was only a trifle higher than the amount invested in mains for an ordinary 6-inch pipe extension of free main work. Work was started July 5, 1927, and the extension completed August 24, 1927. In September, there were 447 customers and by the following August the expected 869 customers were in service. In June, 1930, the customers have increased to 1,088, and the Essex extension has been the means of serving gas to two important industrial customers. Before the expectations as to the number of customers on this extension were realized, that is, in March, 1928, the Eastern Rolling Mills became a customer, the largest we supply, using as much gas as a city with a population of 45,000. Gas is now used for normalizing (heat-treating) steel sheets in two conveyor type furnaces about 75 feet long, to the extent of 100,000 cubic feet per hour, 24 hours a day in the summer. Additional compressor capacity at Canton Station was provided to regulate gas pressure in accordance with the Rolling Mills' demand, and the customer operates four of his own compressors.

The other important industrial customer supplied as a result of the Essex extension is the Glenn L. Martin Company, at Middle River, to whom a further extension of 2.6 miles of 10-inch pipe was made on Eastern Avenue. This customer is the largest of the three airplane manufacturers using our Company's service, has acquired a tract of 1,200 acres and is in production of an airport and factory likely to be the largest in the world for the manufacture of aircraft. Gas is used for the furnaces in the factory and the cafeteria in the office.

The entire Essex extension amounted, at the end of 1929, to 15.2 miles of 4-, 6-, 8-, 10- and 12-inch pipe.

The next event in our story was the establishment of a new policy, called the "Major Gas Extension Policy," whereby the reasonable requirements of suburban settlements near our gas distribution system might be met by furnishing gas supply when the number of houses already erected brings the average length of main per building within our rules for routine extensions, excluding the extension of main necessary to reach the development. Due consideration is to be given in each instance to the cost of the latter and the probabilities of securing additional business within a reasonable time.

Therefore, the Lansdowne Major Extension was started, for the supply of about 300 houses, this number of houses having increased 20 per cent in three years. Lansdowne lies a short distance beyond the 1918 Baltimore City boundary, on the Baltimore and Ohio Railroad, between Washington Boulevard and Annapolis Road. Starting in March, 1928, the extension connected with the 10-inch main on Annapolis Road, installed to supply Brooklyn. A main feeder line of 1.5 miles of 8-inch pipe brought gas to a district governor in Lansdowne, and the total extension was 4.3 miles. The customers served had reached 400 at the end of 1929, and the extension then amounted to 6.5 miles of 4-, 6- and 8-inch pipe, with some special 12-inch pipe on a further extension. The investment of mains per customer is no greater than the cost to the company of the free allowance on the basis of 6-inch pipe.

A forward-looking policy, providing an extension of the company's rate schedules which would enable it to still further expand its territory for gas service rather than making a fixed territorial limit beyond which gas would not be served, was declared by the company in connection with filing new territorial rate schedules with the Public Service Commission on April 18, 1928. This extension of rates did not apply to areas then served, nor to extensions then under way. Later, provisions were made for non-city rates in the industrial gas schedule. In the smaller communities where gas had been established in other parts of Maryland, the rates for gas were necessarily higher than in Baltimore or other neighboring large cities; and the new rates that were established were lower than those applying in such small communities. The extension of the rate schedules took into consideration distances of transmission and distribution and provided other and more nearly compensatory rates, due to the added investment, increased cost, and lessened density of customers, in reaching out beyond Baltimore to communities of sufficient size and density. The usual liberal terms for gas extensions that were the practice of the company were continued.

Briefly, the city rates are applied in an area lying not more than three miles from the Baltimore City 1918 boundary, but within ten miles of the Baltimore City Hall, with the exception of one water-bound territory. The land area of Baltimore City is 78.7 square miles, of which 16.4 square miles are undeveloped, and as the city gas rate district covers approximately 196 square miles, of which 109.1 square miles are undeveloped, it is readily seen that the city gas rates may apply to a vastly increased future population of Baltimore and suburbs. The Company did not avail itself of the opportunity to charge increased rates for service from future extensions in the area not now served within the city rate district. In the area outside of the aforesaid city rate dis-

trict, but within eleven miles of the City Hall, a new rate was set up, and successive additional steps were provided in the area between eleven and thirteen miles and the area more than thirteen miles from the Baltimore City Hall.

The first high-pressure gas transmission line in Eastern Maryland was put in service December 21, 1928, for the supply of gas by this Company to the Annapolis and Chesapeake Bay Power Company, as a substitute for its own gas manufacturing methods in Annapolis, the picturesque capital of Maryland, twenty-seven miles from Baltimore by road. This provided a means whereby gas customers in Annapolis and vicinity gained advantages, and numerous customers enroute between Baltimore and Annapolis over the nineteen mile length of this line could newly obtain gas for many household and commercial applications. Gas service was a boon, not only to the rapidly growing community of Glenburnie supplied enroute, but also to many summer resort developments on the shores of the Severn River. To Annapolitans there came improved service in the form of a supply of greatly increased capacity, and reductions in rates were made to compensate for a new and more uniform and, consequently, more serviceable gas with respect to heat content and also to provide greater inducements in the use of gas. The result has been that the number of gas users in Annapolis and Eastport has increased from 1975, in December, 1928, when the supply from Baltimore began, to 2229, in June, 1930, an increase of 12.8 per cent.

The major extension to Brooklyn contributed an opportunity to make the Annapolis extension, because the gas supply to Linthicum Heights gave opportunity to install a motor-driven compressor station there, operating at 50 to 90 pounds pressure, with a capacity for 100 pounds, for the transmission line. The increased pressure enabled the size of the mains and hence the cost per foot to be reduced, and required the use of welded steel instead of the usual cast iron. The size of the transmission is 6-inch pipe from the station to Glenburnie, 4-inch thence to the plant at Annapolis and 4-inch and 2-inch in the communities served enroute. This compares with the sizes from 12-inch to 4-inch on earlier major extensions described above.

The high pressures are converted to low pressures for utilization, through suitable governors or regulators, before reaching the meters of the customers.

The experience thus had shown that the economies resulting from the use of the smaller pipe with the high-pressure system in those cases where it was found practicable to use it, after allowing for the additional cost of the necessary governors to supply customers with gas at the usual pressures, together with the economies of doing a large job, involving numerous customers, all as one operating project, enabled more favorable terms to be made for main extensions and service work during the installation of such major extension projects. Such terms have been brought to the notice of the respective prospective customers affected. They have gained in the matter of installation costs of both main and service extension work, and they have responded in large numbers, by giving orders so that the work could be installed promptly with the greatest economy in times and labor. It has been the custom to notify the people of the communities at meetings of their improvement associations and the like, outlining fully the terms of the proposed extension, and ample notice has been given, to enable the prospective customers to avail themselves of the service within a reasonable time before the completion of the project. In this matter, the General Service Department and the Main and Service Extension Department have been able to conduct their relations with customers amicably and to the satisfaction of all concerned.

Advantages have come not only to customers, but also to employees, through a wide experience and training in new methods of solving problems and in meeting new kinds of obstacles. Methods of getting pipes across rivers and arms of the sea in a manner to ensure uninterrupted service are illustrations of things that have put to the test the ability of the engineers and the skill of the workmen. Instruction has been provided in new methods of work, the organization has been developed in ability to serve and many types of mechanism have been called into play. The trenching machine digs 1,500 feet of trench per day, and the back filler replaces the work of ten men and back fills 1,000 feet of trench an hour. Replacing the trench takes less time than digging it.

It was found practicable to extend gas to Laurel about a year ago by way of the Washington Road, and to utilize the compressor station that was established for the supply of gas to Annapolis and intervening points, by the addition of the necessary mechanical capacity.

The Laurel extension consists of about 17 miles of carefully tested steel pipe, through portions of Anne Arundel County, Howard County and Prince Georges County. Of this, 6 miles of 6-inch pipe extends along Camp Meade Road, Stony Run Road and Hanover Road to Washington Boulevard, and 10.9 miles of 4-inch pipe thence to Laurel. Lateral lines are of 3-inch and 2-inch pipe. About 900 houses are passed, of which 427 had become customers at the end of 1929.

The year 1930 has likewise been marked with Major Gas Extensions: to Reisterstown and Glyndon, located 18 miles from the Baltimore City Hall; also to Ruxton, Riderwood and Lutherville, eleven miles away. The former is connected to a 16-inch low-pressure main at Pikesville and consists of nine miles of 6-inch pipe to Reisterstown, with two additional miles to Glyndon, with 3- and 2-inch laterals, a total of 16.6 miles. It will serve 800 houses. The latter begins at Charles Street and Bellona Avenue and extends along Bellona Avenue, using 12.2 miles of 6- and 4-inch steel pipe for main and 3- and 2-inch laterals. It will serve 400 customers.

Thus the gas system has been expanded and gas made available to large numbers of people as far as Annapolis on the southeast, 27 miles from the City Hall; Laurel, 21 miles to the southwest; Reisterstown and Glyndon, 18 miles to the northwest;

(Continued on page 461)

Development of a Great Utility

The Peoples Gas Light and Coke Company Enjoys a position of Renown in the Gas Utility Field

THE outstanding feature of the tremendous advance in the living conditions of the American people within the last quarter century is evidenced in the development of the utility companies supplying the population with gas, water and electricity," says the *U. S. Piper,* published by the United States Pipe and Foundry Company. "At one time in the history of the world, and today in many foreign countries, the advantages derived from the use of these three commodities could only be enjoyed by the wealthy.

"In America, however, anybody may enjoy the advantages of gas, water and electricity by reason of the moderate costs involved as well as of the ease with which the commodity may be supplied.

"Among the foremost utilities of the world stands the Peoples Gas Light and Coke Company of Chicago. This corporation is capitalized at $141,324,982 and supplies 532,785 services through 3,694 miles of mains. In addition to supplying gas, it produces by-products, principally coke and tar.

"The development of this company is very closely linked with that of Chicago. It was organized in 1849 by a group of public-spirited citizens who had tremendous faith in the future of Chicago. It is interesting to observe the City of Chicago as it existed in 1850. The Northern boundary on the lake was at Center Ave., which extended West to Clark St., South to North Ave., West to Wood St., and South to 22nd St., and then East to the Lake. The vast areas now covered by the famous park system (except Lincoln Park), the University of Chicago and the Stock Yards were all outside the City limits. The streets, such as they were, were made of planks, which was the only substance which could stay above the prairie mud subsoil, and the highly developed street car and omnibus system of the present day was in embryo.

"In 1848 the first railroad arrived in Chicago connecting Galena and later Elgin with Chicago, and was called the Galena & Chicago Union (Note the sequence of names) it is now part of the Chicago & Northwestern system. In the same year an electric telegraph line connected Milwaukee and Chicago, but the use of electricity for street cars, lights, power, bells, and so forth, was unheard of. The first public building was opened on January 1, 1848, while in 1851 a beautiful municipal building was erected which was unfortunately destroyed in the Great Chicago Fire. It is especially interesting to note, in 1861, that an advertisement for the new Sherman House, opened that year, read as follows: 'A perpendicular railroad connects floor with floor, rendering passage by the stairs unnecessary.' This was Chicago's first elevator.

"The development of the Peoples Gas Light and Coke Company was no less romantic than that of the City of Chicago. On April 10, 1849, the first boat was to come up the Il-

The Growth of the Gas Industry

THERE is no one who can forecast the trend of American industry with absolute certainty. However, there is much evidence at hand to support the belief that the gas business in the United States is destined to become one of the world's greatest business enterprises. It has been evident to our students of combustion for many years that the ideal agent of heat is a gaseous fuel. And it is also plain that our coal-burning methods entail a very great degree of waste. Gas is therefore just beginning to become recognized as a medium universally applicable to the production of heat.

Manufactured gas was discovered as such in about the year 1609 by the alchemist John Baptist von Helmont, of Brussels. In the course of his experiments on fuels, he discovered that they yield up what he described as a "wild spirit" which would burn when a flame was applied. This "wild spirit" he called "gas," but due to superstition and ignorance, it was nearly two hundred years until practical steps were taken to harness this powerful medium.

INTERESTING GAS CONSUMPTION FIGURES

(Figures in Million Cubic Feet)

	U. S.	British Isles	Japan	Switzerland
1919	1,045,916	249,537	.....	....
1920	1,118,098	.....	.....	4,640
1921	989,003	.....	.....	4,630
1922	1,112,546	.....	12,206	4,865
1923	1,392,857	.....	.....	5,195
1924	1,546,721	269,602	.....	5,555
1925	1,609,839	.....	.....	5,945
1926	1,778,484	.....	.....	6,270
1927	1,916,248	.....	17,284	6,730
1928	2,062,449	.....	.....	7,170
1929	.....	318,509	22,338	7,730

The first successful application of gas to the production of artificial illumination occurred during the celebration of the Peace of Amiens in April, 1802, in which a public display was made which attracted wide attention and comment. However, the same prejudice which always accompanies revolutionary inventions, prevented definite developments in the art until 1812, when "The London and Westminster Gas Light and Coke Company" was chartered by the British Parliament. The first gas company to be formed in the United States was organized in Baltimore in 1816, and used Cast Iron Pipe exclusively for the distribution of gas.

The growth of this remarkable industry has been very impressive. The industry in the United States is represented by about 655 companies, of which 603 are privately owned. These companies serve a list of customers amounting in 1929 to 12,200,000.

Cast Iron Pipe has always been the standard type of construction for gas distribution lines. Its permanency and freedom from troublesome leaks insure a minimum of maintenance charges, which has been recognized with approval by public utility companies engaged in the manufacture and transmission of gas. Buried, as it often is, beneath three or four feet of dirt and then by several inches of expensive street paving, permanency of the line and freedom from leaks are factors of great importance.

From the increasing pressures now in vogue, special types of joints for Cast Iron Pipe have been developed. This renders Cast Iron Pipe universally applicable for use on Gas Distribution Systems.—THE U. S. PIPER.

linois River, through the Illinois-Michigan Canal and thence into Lake Michigan, thus placing at Chicago's command an inexhaustible supply of coal from which to manufacture gas. On October 16, 1848, charter had been applied for by a group of public-spirited and prominent Chicago men, comprising H. L. Stewart, postmaster; F. C. Sherman, owner of the Sherman House; Peter Updike, Peter Page, aldermen; and W. S. Burnett. In 1849 the charter was signed by Governor French at Springfield, and 24,000 feet of mains were laid, covering the principal downtown streets. A gas holder, whose capacity was 60,000 cubic feet, and a gas manufacturing plant of seven furnaces were erected at Munroe and Market Streets. On September 4, 1850, sufficient gas having been generated to fill the holder, the street lights and buildings were lighted for the first time. Since that time—almost eighty years ago—the industry has never ceased to serve the Chicago public, night and day. With the exception of an occasional local interruption, service has been continuous. This means that even when Chicago was prostrated and paralyzed by the Great Fire of 1871, with water service and the like suspended, the gas service was maintained, except for local interruptions within the burned area.

"The consumption of gas at the beginning averaged about 15,000 cubic feet a day but by October, 1850, it had risen to 22,000 cubic feet. Today the maximum daily consumption amounts to 176,735,000 cubic feet as of January 13, 1929. On November 28, 1929, the maximum hourly send-out was recorded for all time when 15,485,000 cubic feet were distributed, or more than one thousand times the initial daily consumption in 1850. Coke was sold at 12½ cents a bushel and coal tar for $1.50 a barrel, which helped pay for the coal which cost at that time $1.25 a ton, and in 1851 the first annual dividend of 5½ per cent was declared on the capital stock of the Company, then valued at $90,000.

"In spite of the many conditions working against the growth of the Company, its advancement kept even with that of the City. In 1850 the population was 30,000, in 1860 it was 110,000 in spite of the disastrous panic of 1857. During this period the Company increased the mileage of its mains from five to fifty-three and the number of its consumers from 125 to over 2,000. In 1853, a 4-inch extension was made under the Chicago River at LaSalle Street to the North Side and in 1854 a similar extension was made under the river at Munroe Street to feed the West Side. In addition, a 300,000 cubic foot holder was constructed at Market and Munroe Streets which was unfortunately destroyed by the Great Chicago Fire.

"Today the Peoples Gas Light and Coke Company occupies a front rank position among the utilities of this country. It effectively serves the City of Chicago with gas which is extensively used for domestic and industrial heating as well as for cooking, lighting and refrigeration. The gas lines of the Company, which are exclusively of Cast Iron Pipe, cover the entire City and are tied in with the gas lines of the Public Service Company of Northern Illinois, the Western United Gas & Electric Company and the Northern Indiana Public Service Company. These interconnections entail the same flexibility and economies in the gas field as the similar interconnections of an electrical superpower system do in the electrical power field.

"In addition to the interconnections, a unique transmission main has been erected by the Peoples Gas Light and Coke Company. This main consists of 32 miles of 48-inch Cast Iron Gas Pipe and runs from the Calumet Producing and Distribution Station at 96th Street along the Western portion of the City to the North Shore Distribution Station near Devon Avenue. This 48-inch Cast Iron Gas Pipe was manufactured by the United States Pipe and Foundry Company, as well as a large number of other mains and distribution lines within this system. The 48-inch line, together with many of the other lines, is partly composed of plain end Cast Iron Gas Pipe equipped with Dresser Couplings, and partly bell and spigot pipe. Many of the smaller diameter lines used five meter lengths. Along the 48-inch trunk line there are a large number of holders and distributing stations, also some of the more prominent production stations. The station at Crawford Avenue is the last word in up-to-date equipment for the manufacture and distribution of gas.

"As the demand for industrial and domestic heating by gas has increased, it has been necessary to greatly enlarge the storage accommodations within the system. In 1849, when the Company was founded, the storage space amounted to 60,000 cubic feet. This gradually grew till in 1925, there were 63,000,000 cubic feet of storage space available. In the last five years this figure has more than doubled so that today there is storage space amounting to 128,000,000 cubic feet. Among the notable additions to the system's capacity was the 73rd Street holder described in a previous issue of *The Piper*. The capacity of this holder alone amounted to 20,000,000 cubic feet and was the largest individual gas container in the world.

"It is fitting to say a few words of tribute to the far-sighted and public-spirited men who brought about the development of this Company. The Hon. Hugh T. Dickey, first judge of the Circuit Court of Cook County, was the Company's first President and remained in office until 1873. James K. Burtis, a lumber dealer, was Secretary and Treasurer. The Directors were Thomas Dyer, a commission merchant, who later became Mayor in 1862; Joseph Keen, Jr., bookseller and stationer; Mark Skinner, attorney for the company; Franklin, George and John Lee, engineers of Philadelphia, and George Smith of the Wisconsin Fire and Marine Insurance Company.

"In 1913, Samuel Insull was elected to the Board of Directors and became its chairman. During the World War, practically all of his time and attention was focused on his service as head of State Council of Defense of Illinois.

"During this period, the Peoples Company was hard hit by war time circumstances: costs were doubling and trebling; rates were fixed and stationary; and the rate regulating

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Home Service Activities

Demonstration Home at Cambridge

THE Cambridge Gas Company and the Cambridge Electric Company, of the Associated Gas and Electric System, opened their new "little house," under the direction of Miss Grayce Darling, director of the home service department at Cambridge, Mass., several months ago. A small house built in the basement of the main office at 719 Massachusetts Avenue, it comprises a comfortable as well as beautiful living-room, a not too small "breakfastette," and a thoroughly convenient kitchen.

Demonstration Kitchen

Miss Darling's careful attention to every detail is shown by the utilization of space in the kitchen and in the harmonious treatment of the living-room. The former is completely modern in its time- and labor-saving equipment and appliances. An insulated gas range, with a heat control, is among the outstanding features of the kitchen. But an automatic water-heater in one corner and a gas refrigerator in the opposite corner are immediately observed upon entering the room. Two shades of buff are the main colors, with which the appliances tone nicely, and a slightly more predominate note of color is found in the window curtains and the terra-cotta inlaid floor covering.

Opening out of the kitchen is a small breakfast nook with cool green furniture. At present the table is set for a Sunday night supper.

The living-room is early American style and decoration. A brick fireplace flanked by built-in book-shelves extends along one wall, and the outer wall space is broken by the front entrance door and a row of long casement windows.

Since the room is a combination office and reception room, Miss Darling gave much time and thought to the task of selecting furniture which is at once formal and informal. The result of her endeavor is, however, most satisfying. She selected light maple for the furniture, which includes her desk, a coffee table, a fireside bench, and a few small end-tables. Several easy chairs and an unusual divan add to the attractiveness of the room, while an old Colonial mirror and long chintz draperies give it dignity and charm. Correct lighting has been achieved throughout the entire house.

The exterior of the "little house" is quite as pleasing as the interior. It has a shingle roof, many windows and gay flower boxes with trailing vines. And as the books, the ferns, the goldfish make the interior homelike, so the green lawn and blossoming apple tree make the exterior appear well-cared for and greatly enjoyed.

That the customers of Cambridge and Somerville, both supplied by the Associated companies, know and appreciate the home service department was evinced by their interest in the opening. Over a thousand visited the "little house" during the week of the housewarming, and were shown through and entertained by Miss Darling and her staff, which includes Marion L. Smith, assistant director; Greta Holm, Ethelind D. Lowe and Beatrice T. Luther. Home service measuring spoons were given as souvenirs.

"Breakfastette"

Reception Room

The guests needed no introduction to the work of the department because the numerous recipes, tested and retested in the home service kitchen, the several series of cooking classes, the actual work in the homes—all these are well known in the community, and have regularly increased.

Front Porch of the "Little House"

Unusual Cooking School

A novel feature of educational work on gas cookery was sponsored by the Louisiana Public Utilities Company at Lafayette, La., when a cooking school for colored servants was conducted by Miss Myrle Richard, home service director. Classes were held each afternoon for a week, with an average attendance of fifty-seven. Economy in the use of gas, preparation of meals cooked entirely in the oven, the proper use of oven control, and cleaning and caring for the range, were taught and demonstrated. Prizes were given for unique recipes contributed during the school, and diplomas were awarded.

Gas Appliances Display Feature at Fair

ONE of the outstanding displays at the American Fair, held in the Atlantic City (N. J.) Auditorium from July 1 until August 25 was the exhibit of gas appliances. This feature of the exhibition was conducted under the supervision of the Atlantic City Gas Company with the cooperation of other Eastern companies and the American Gas Association.

About 600 square feet of space in a central section of the Auditorium were occupied by a complete line of modern household appliances and equipment.

There was an average daily attendance of more than 25,000 during the fair. All states in the union and many foreign countries were represented by the visitors.

The educational work of the gas exhibit was appreciated by many housewives who learned for the first time about such features as gas refrigeration, insulated ranges with the oven heat control, automatic storage hot water heaters, and gas heated boilers. An average of fifty worth-while leads a week were secured. While a majority of the prospects were private home owners, architects and builders also made inquiries about installations on a large scale for apartment houses, hotels, and restaurants.

A well-appointed kitchen was one of the main features of the exhibit. It contained a Quality range, Electrolux refrigerator, Crane combination sink, Hoosier cabinet, Ruud hot water heater, with all the furnishings carrying out a green color scheme. Delicious cakes, tempting cookies and pastries, prepared by the home service directors, were always on display on the breakfast table in the center.

Those who cooperated in the demonstrations were: Miss Jessie McQueen, home service counsellor for the American Gas Association, New York City; Miss Helen C. Farrell, Public Service Electric & Gas Company, Camden, N. J.; Miss Margaret Oliphant, Public Service Electric & Gas Company, Trenton, N. J.; Miss Ruby E. Kibbe, Jersey Central Power & Light Company, Asbury Park, N. J.; Mrs. Margaret Meyers, Duquesne Light Company, Pittsburgh, Pa.; Miss Helen R. Macrum, Philadelphia Gas Works, Philadelphia, Pa.; H. T. Knight, Roberts & Mander Stove Company, Philadelphia Pa.; and Mrs. Elsa Wingert, home service director of the Atlantic City Gas Company.

Gasettes

AT the Eastern States Exposition, held in Springfield, Mass., during September, the Springfield Gas Light Company and the Glenwood Range Company cooperated to show an exhibit of modern kitchen equipment in contrast to colonial. The exhibit was displayed in a portable house, 16 × 34 feet, on the grounds of the New England Colonial village.

During the week, the Glenwood Range Company had a kitchen in the Potter house for lectures each day. Guest demonstrators were assisted by Mrs. Caroline Webber Bixby, home service director of the Glenwood Company, who was actively in charge of the exhibit.

Wednesday, September 17 was set aside as "Editors Day." A special luncheon was given that day to all visiting editors of household magazines and home economists by the home department of the exposition.

During the general program, Miss Anna Barrows, of Columbia University, spoke on "Colonial Kitchens and Their Equipment"; Eloise Davidson, of the National Electric Light Association, on "Electricity in the Twentieth Century Kitchen," and Jessie McQueen, home service counsellor of the American Gas Association, on "Gas Equipment in the Twentieth Century Kitchen."

The Tercentenary celebration in New England has been a factor in the program of various home service departments this summer. At Cambridge, Miss Grayce Darling was hostess at one of the old houses and also assisted in the Cambridge parade, which was quite an event—15,000 participating. The gas company float, depicting 1630 and 1930 cooking, with the Home Service Department cooperating, won first prize in the Commercial Section.

Development of a Great Utility

(Continued from page 458)

body was unwilling to alter existing rates. When the war ended, Mr. Insull's concern for the Company's situation moved him to assume personal responsibility for its management. He was accordingly elected president in March, 1919. Effects of this move were felt immediately and it was not long before the Company was once more on a firm basis. Today the organization of the Peoples Gas Light and Coke Company comprises some of the most influential and foremost men of the nation. Samuel Insull is Chairman; Samuel Insull, Jr., is Vice-Chairman; George F. Mitchell is President. The Board of Directors consist of Samuel Insull, Samuel Insull, Jr., Stanley Field, Martin Insull, George F. Mitchell, Stuyvesant Peabody and Edward F. Swift and the Company not only occupies a position of great prominence in the City of Chicago, but has earned the respect of the industrial leaders of our Nation as a whole."

Testing Laboratory
R. M. CONNER, Director
MANAGING COMMITTEE
R. W. GALLAGHER, Chairman N. T. SELLMAN, Secretary

Laboratory Staff Holds Annual Picnic

Start of men's foot-race

THE annual picnic of the Testing Laboratory Staff was held at the Willowick Country Club, near Cleveland, on the afternoon and evening of August 29.

The program consisted of women's and men's golf tournaments, swimming, baseball, various foot races and other sport events, as well as a bridge tournament. A delightful banquet was held at the club house in the evening, followed by several hours of dancing.

Prizes were awarded in the evening to the winners of the various events, the most coveted prizes going to the winners of the golf tournaments.

Prizes were distributed as follows:

First Prize Men's Golf Tournament—Francis Rutherford.

First Prize Women's Golf Tournament—Icona Andrews.

Second Lowest Net Score Men's Tournament—W. M. Couzens.

Highest Score Men's Tournament—Wm. Smith.

Second Highest Score Men's Tournament—R. C. Gregg.

Women's High Bridge Score—Mrs. Wm. Lingo.

Women's Low Bridge Score—Miss Sally Dodd.

Men's Running Race—Dr. F. E. Vandaveer.

Women's Running Race—Mrs. F. E. Vandaveer.

Tug-of-war

Baltimore Gas Extensions Improve Good Public Service

(Continued from page 456)

and Lutherville, 11 miles to the north. At the present time, there are 8,952 gas customers benefiting by the Major Gas Extensions figuring in this article (including 2,229 Annapolis customers), using or about to use service for domestic, commercial and industrial purposes from 141.7 miles of main extensions. Of these, there were 1,541 domestic and 40 commercial customers actually supplied by the Consolidated Company outside the city gas rate district at the end of June, 1930.

Summarizing this article, it may be said that the Company, through its policy relating to Major Gas Extensions, through the adoption of improved special methods of economy in construction for rural service and outlying territories, through the establishment of a sensible system of territorial rates which are low in comparison with similar outlying communities elsewhere in Maryland, and through offering the same or better terms for gas main extension as apply to the general distribution system, has adopted progressive and flexible methods which insure future growth of its business and of the communities served, in ways that are entirely practical and satisfactory to the customers. This happy result increases the value of the service of the company to the community in which it is doing business, contributes to the comfort and economy of all the people reached by these lines, and represents another contribution by the company to its excellent record for good public service.

Florida Promised Natural Gas by December

CONSTRUCTION of a transmission line for natural gas from a point near Mobile, Ala., to Pensacola, Fla., has been authorized by the Southern Natural Gas Corporation and work will begin within a short time, it is reported. From this line natural gas will be made available for distribution by the local gas company in the city of Pensacola to near-by industrial users. It is expected that the line, which will signal the first introduction of natural gas to Florida, will cost approximately $1,000,000. The line has been surveyed, rights-of-way are being secured, and it is the intention of the Natural Gas Engineering Corporation, which will build the line, to have this fuel available for distribution in Pensacola, by the local gas company, about December 1.

Manufacturers Section

F. G. CURFMAN, Chairman — C. W. BERGHORN, Secretary — E. S. DICKEY, Vice-Chairman

Exhibit Opens October 13

THE exhibition of the Twelfth Annual Convention of the American Gas Association will open in the Municipal Auditorium at Atlantic City, N. J., at 10 a.m., Monday, October 13, and will continue open each day from 9 a.m., until 6 p.m. It will be open for public inspection Monday, October 13, from 7:30 to 10 p.m. The exhibit will close at noon on Friday, October 17.

During the hours of public inspection Monday night, Lew White will give an organ recital, in the exhibition hall, on the world's largest organ.

Following is a list of this year's exhibitors:

Name

Abendroth Brothers
A-B Stove Co.
Acme Card System Co.
Adams Bros. Mfg. Co., Inc.
Addressograph Co.
A. G. A. Activities
Air Reduction Sales Co.
Alpha-Lux Co., Inc.
Aluminate Co., Inc.
American Cast Iron Pipe Co.
American Foundry & Furnace Co.
American Gas Furnace Co.
American Gas Journal
American Gas Products Corp.
American Heater Corp.
American Meter Co.
Griffin & Co., John J.
Helme & McIlhenny
Maryland Meter Works
McDonald & Co., D.
Metric Metal Works
Pacific Meter Works
Tufts Meter Works, Nathaniel
American Radiator Co.
American Rolling Mill Co.
American Stove Co.
Clark & Co. Div., Geo. M.
Dangler Stove Co. Div.
Direct Action Stove Co. Div.
New Process Stove Co. Div.
Quick Meal Stove Co. Div.
Reliable Stove Co. Div.
Amherst-Logan County Coal Corp.
Andes Range & Furnace Co.
Autogas Corp.
Automatic Gas Steam Radiator Co.

Bailey Meter Co.
Barber Gas Burner Co.
Barber-Greene Co.
Bartlett Hayward Co.
Bartlett & Snow Co., C. O.
Bauer & Black
Beach-Russ Co.
Beckwith Co.
Bernitz Furnace Appliance Co.
Bingham & Taylor Corp.
B-Line Boiler Co.
Blodgett Co., G. S.
Bowser Service Corp.
Bristol Co.
Bryan Steam Corp.
Bryant Heater & Mfg. Co.
Bullard-Davis, Inc.
Burroughs Adding Machine Co.
Buxton & Skinner Printing & Stationery Co.

Canadian Gas Association
Carrier-Lyle Corp.
Central Foundry Co.
Chambers Mfg. Co.
Chaplin-Fulton Mfg. Co.
Chicago Bridge & Iron Works
Claus Mfg. Co.
Cleveland Gas Meter Co.
Cleveland Heater Co.
Cleveland Trencher Co.
Clow & Sons, James B.
Columbia Burner Co.
Columbus Heating & Ventilating Co.
Connelly Iron Sponge & Governor Co.
Connersville Blower Co.
Consumers Construction Co.
Continental Stove Corp.
Coxhead Corp., R. C.
Crane Co.
Cribben & Sexton Co.
Crown Stove Works
Cruse-Kemper Co.
Cutler-Hammer, Inc.

Dearborn Chemical Co.
Des Moines Gas Co.
Detroit-Michigan Stove Co.
Garland Div.
Jewel Div.
Detroit Vapor Stove Co.
Dick Co., A. B.
Dresser Mfg. Co., S. R.
Drinker Respirator
Dun-Rite Clock Device Co.
Duo-Tor Mfg. Co.

Econoheet Co.
Economy Governor Co.
Eddy Valve Mfg. Co.
Electrolux Refrigerator Sales, Inc.
Elliott Addressing Machine Co.
Ensign-Reynolds, Inc.
Eriez Stove & Mfg. Co.
Estate Stove Co.
Everhot Heater Co.

Favorite Stove & Range Co.
Felt & Tarrant
Fisher Governor Co., Inc.
Florence Stove Co.
Floyd-Wells Co.
Fox Furnace Co.
Foxboro Co., Inc.
Frigidaire Corp.
Fuller & Warren Co.

Gas & Electric Heater Co.
Gas Machinery Co.
Gas Purifying Materials Co.
General Ceramics Co.
General Coal Co.
General Gas Light Co.
General Iron Works
Gestetner-Duplicator Corp.
Giant Mfg. Co.
Glenwood Range Co.
Groble Gas Regulator Co.
Guardian Gas Appliance Co.

Harper-Wyman Mfg. Co.
Heating & Ventilating
Hill, Hubbell & Co.
Hoffman Heater Co.
Homestead Heater Co.
Hones Inc., Charles A.
Hotstream Heater Co.
Humphrey Co.
Hurley Machine Co.

Improved Equipment-Russell Engineering Corp.
Independent Stove Co.
Inertol Co.
Intercolonial Gas Journal of Canada
International Business Machines
Isbell-Porter Co.

J. & G. Brass Co.
Johns-Manville, Inc.
Johnson Gas Appliance Co.
Jones Hollow Ware Co.
Judelson Dryer Corp.

Kelly Inc., John G.
Kernit Incinerator Co.
Kitson Co.
Kompak Co.
Koppers Co.

Lambert Meter Co.
Lamneck Co., W. E.
Lattimer Stevens Co.
Lavino & Co., E. J.
Linde Air Products Co.
Lindemann & Hoverson Co., A. J.
Littleford Bros.
Lovekin Water Heater Co.

Maehler Co., Paul
Majestic Mfg. Co.
McEverlast, Inc.
McWane Cast Iron Pipe Co.
Mears-Kane-Ofeldt, Inc.

Merco Nordstrom Valve Co.
Mettler Co., Lee B.
Milwaukee Gas Specialty Co.
Minneapolis-Honeywell Regulator Co.
Mohawk Asphalt Heater Co.
Monarch Products Co., Inc.
Moore Brothers Co.
Mueller Co.
Mueller Furnace Co., L. J.
Mulcare Engineering Co.

National Equipment Corp.
National Lead Co.
National Tube Co.
Natural Gas Magazine
Naylor Pipe Co.
1900 Corp.

Ohio Foundry & Mfg. Co.

Partlow Corp.
Patrol Valve Co.
Peerless Heater Co.
Peerless Mfg. Co.
Pennsylvania Furnace & Iron Co.
Perco-Steril Machine Corp.
Permutit Co.
Perser Corp.
Petroleum Heat & Power Co.
Philfuels Co.
Pittsburgh Coal Co.
Pittsburgh-Des Moines Steel Co.
Pittsburgh Equitable Meter Co.
Pittsburgh Incinerator Co.
Pittsburg Water Heater Co.
Porcelain Enamel & Mfg. Co.
Public Service Electric & Gas Co.
Public Utilities Reports

Ray-Glo Corp.
Remington Rand, Inc.
Republic Steel Corp.
Reynolds & Reynolds Co.
Reynolds Gas Regulator Co.
Reznor Manufacturing Co.
Richmond Radiator Co.
Robbins Publishing Co.
Roberts & Mander Stove Co.
Roberts Brass Mfg. Co.
Roberts-Gordon Appliance Corp.
Robertshaw Thermostat Co.
Roots Co., P. H. & F. M.
Roper Corp., Geo. D.
Rudy Furnace Co.
Ruud Manufacturing Co.
Ryan, Scully & Co.

Safety Gas Lighter Co.
Safety Gas Main Stopper Co.
Sands Mfg. Co.
Savory, Inc.
Schoedinger, F. O.
Selas Co.
Semet-Solvay Engineering Corp.
Sherwin-Williams Co.
Slattery & Bro., J. B.
Skinner Co., M. B.
Smith Mfg. Co., A. P.
Spencer Thermostat Co.
Sprague Meter Co.
Stacey Bros. Gas Construction Co.
Stacey Engineering Co.
Stacey Mfg. Co.
Standard Gas Equipment Corp.
Stat-Amatic Instrument & Appliance Co.
Sturtevant Co., B. F.

Superior Meter Co.
Superior Screw & Bolt Mfg. Co.
Surface Combustion Co.

Tappan Stove Co.
Thatcher Co.
Therminsul Corp. of America
Time-O-Stat Controls Co.

Underwood-Elliott Fisher Co.
Union Steel Products Co., Ltd.
United Engineers & Constructors, Inc.
United States Bureau of Mines
United States Pipe & Foundry Co.
Universal Sand Equipment Co.

Vulcan Mfg. Co.
Victaulic Company of America

Wailes Dove-Hermiston Corp.
Walker & Pratt Mfg. Co.
Warm Air Furnace Fan Co.
Watts Regulator Co.
Weiskittel & Sons
Welsbach Co.
Western Gas Construction Co.
West Gas Improvement Co.
Wilbraham-Green Blower Co.
Wilcolator Company
Window Display Committee
Wood & Co., R. D.
Wyoming Shovel Works

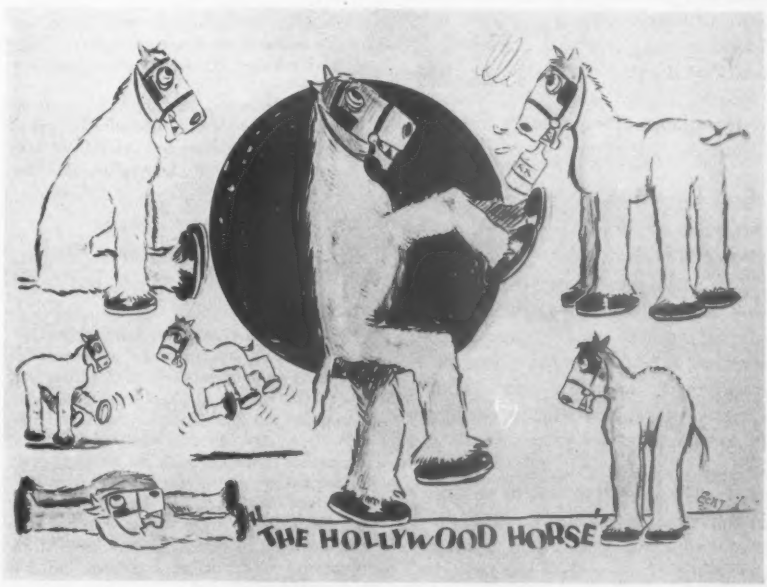
Youngstown Pressed Steel Co.
Youngstown Sheet & Tube Co.

Approves Plan to Divide Manufacturers' Section

IN order to provide a means for initial steps toward giving the manufacturers individual service for the accomplishment of closer cooperation of all manufacturer members with each other as well as with the utility operators, the Executive Board of the American Gas Association has approved the following recommendation of the Manufacturers' Section, as submitted by its chairman, Floyd G. Curfman:

"That there be created within the Manufacturers' Section two divisions, one of manufacturers of appliances and the other of all other manufacturer members. Each division should elect its own presiding official who should be a vice-chairman of the section. The chairman of the Manufacturers' Section could be chosen alternately from the two divisions and each year he would have the assistance and support of a vice-chairman directly in touch with his division. This method of organization is suggested so that the divisions can be arranged without conflict with the by-laws. The appliance division should meet, perhaps, several times a year at its discretion; probably it should not be necessary or desirable for the other division to meet more than once, say at the convention."

To Entertain Members at Atlantic City



The Hollywood Horse—Gerald and Hoag—Promises Some Hilarious Excitement on the Entertainment Program at the Twelfth Annual Convention

Commercial Section

G. E. WHITWELL, Chairman — J. W. WEST, Jr., Secretary — E. R. ACKER, Vice-Chairman

Domestic Cooking With Gas

THE following resolution, proposed by the Domestic Range Committee and approved by the Managing Committee of the Commercial Section, was unanimously adopted by the Executive Board of the American Gas Association September 17, 1930:

"WHEREAS, other industries are putting forth strong sales efforts to secure a portion of the domestic cooking load, such efforts being no longer confined to rural areas not served by gas but intended as direct inroads on the present cooking loads of gas companies in many situations, and

"WHEREAS, it is easily demonstrable not only to ourselves but to the public, that gas is a supremely satisfactory fuel for cooking, and that the modern gas range includes all of the latest devices for automatic control, comfort, economy, efficiency and convenience, thereby making the necessary appeal to the customer,

"NOW THEREFORE BE IT RESOLVED, that in order that the gas industry may hold and increase its present domestic load, of which cooking represents over 50 per cent, aggressive policies are necessary on the part of responsible executives by inaugurating comprehensive and continuous programs for merchandising the latest type of modern gas ranges,

"BE IT FURTHER RESOLVED, that this program should include the following activities:

"1. Sales promotion, in both the new and replacement markets, of improved types of modern ranges with insulated heat controlled oven, preferably with automatic time control. Continuation of manufacturers' efforts to increase the 'eye-value' of all gas appliances.

"2. The expenditure of more money in advertising, publicity, and other sales promotional activities to inform the public of the desirability and economy of gas over other fuels, when used in the most modern type of gas range.

"3. Sales supervision and personnel of the highest type, capable of directing and applying modern merchandising methods—compensated in an effective manner.

"4. Recognition of the fact that, in the industry's desire to build the load with other appliances, there must be no curtailment or omission of activities designed to retain its present basic cooking load. The program recommended will not only reinforce the industry's efforts to sell gas for other purposes but will increase the present cooking consumption.

"5. On the part of companies furnishing both gas and other fuels, it is evident that an executive policy as to sales of appliances should be laid down and adhered to."

French Association Proceedings Available

Through the courtesy of the Union Syndicale de L'Industrie Du Gaz en France and the Association Technique de L'industrie Du Gaz en France, the American Gas Association has a limited number of their proceedings for 1929.

Members desiring copies of these proceedings should address requests to Luis Hilt, Librarian, American Gas Association, 420 Lexington Avenue, New York, N. Y.

Maryland Association Affiliates With A. G. A.

THE Executive Board of the American Gas Association, at its meeting September 17, 1930, approved an agreement of affiliation with the Maryland Utilities Association. By this action the latter Association joins the other nineteen state and district gas associations which by formal agreement cooperate with the national body in the furtherance of the gas industry.

William A. Zobias, of the Central Public Service Co., at Hagerstown, Md., was a prime mover in bringing about this affiliation. R. E. Zown, of Frederick, Md., is the president, and R. E. Kinnear, is the secretary of the Maryland Utilities Association.

Minneapolis Ratifies New Gas Franchise

AFTER long consideration, the City Council of Minneapolis, on August 29, ratified a new franchise for the Minneapolis Gas Light Company for a period of twenty years. Rates are provided subject to change at the end of each three-year period. There is a $1 minimum charge for 600 cu.ft. or less per month.

Weymouth and Deal are Elevated

E. C. Deal, president of the Peoples Light and Power Corp., has been elected president of the Oklahoma Natural Gas Corp. Thomas R. Weymouth, former president, has been elected chairman of the board.

Further A. G. A. Recognition

THE revised ordinance of the City of Pittsburgh, regulating the installation and inspection of warm air heating systems, provides that "Gas furnaces shall be rated at 60 per cent of the heat input in B.t.u. unless a greater efficiency is approved by the American Gas Association."

Developing Quinton Field

THE development of large quantities of natural gas in the Quinton field, which lies adjacent to the coal mining district of Southeastern Oklahoma, is furnishing gas for several coal mining towns in Oklahoma. Two of these towns, Hartshorne and Haileyville, have been given gas service within the month by the Oklahoma Central Utilities Company. The same company also has a franchise to supply Wilburton, another coal mining town, with natural gas. Krebs, another town in the heart of the coal mining district, has recently secured natural gas service.

The Public Service Company of Oklahoma, allied with the Insull interests and principally engaged in the electric light and power business, is giving natural gas service to Krebs.

K. H. Cree Joins A. G. A. Headquarters Staff

KENNETH H. CREE joined the American Gas Association headquarters staff September 1, 1930, as assistant secretary of the Technical Section. Mr. Cree was formerly affiliated with several companies which adequately equipped him for the duties of his new position.

Industrial Gas Section

C. C. KRAUSSE, Chairman — C. W. BERGHORN, Secretary — D. W. CHAPMAN, Vice-Chairman

Notes On Factory Heating Estimates

By C. GEORGE SEGELER
Industrial Editor, A. G. A.

IN the Third Edition of "House Heating," Industrial Gas Series, American Gas Association, Table 2-A on page 17 there is presented some new material for use in estimating the heating requirements of industrial buildings. This table gives the degree days on a 45 and 55 degree basis; that is to say, the number of days times the number of degrees below 45 and 55 degrees respectively in the heating seasons. It will be noted that wherever the value came below 300, it has arbitrarily been omitted from the table, on the grounds that no accurate estimate of the heating load could be made with the degree day unit when the values became as small as this. The degree day figures could not be obtained by taking an arithmetic proportion of the number of degree days based on 65 degrees previously given. The actual temperatures had to be used in developing the table.

Building Heat Loss

For industrial heating installations, the heat loss is frequently figured on other temperature bases than 70° and 0°. For purposes of illustration in these notes, it is assumed that buildings are to be heated to 50° and 60° respectively.

There are two ways of arriving at the hourly heat loss under these conditions: Either the usual method may be followed for calculation to the 70° basis, and then 6/7 or 5/7 of this value taken. This answer would be amply precise for estimating work. It is possible, however, to look up the heat transmission coefficients for the values 50° to 0° and 60° to 0°, and multiply them by the respective temperature differences to obtain a slightly closer estimate. However, the heat transmission coefficients vary so slightly within the temperature limits given, that this refinement is unnecessary. The usual values may be employed, and they may be multiplied by the temperature difference of 50° or 60° as the case may be.

In the case of residence heating, a relationship was discovered, showing that when the outside 24 hour average temperature fell below 65°, the usual household turned on their gas heating system; that is to say, approximately a five-degree differential between the average 24 hour outside temperature and the desired indoor temperature occurs before the heating units are placed in operation. The similar relation for industrial heating has not yet been ascertained. Therefore, in the absence of definite information, the same differential will be assumed, although it is quite likely this will be changed when more information is available. For this reason, the degree day table has been given on a 45° and 55° day basis, corresponding to industrial heating requirements of 50° indoor and 60° indoor temperatures respectively.

Gas Requirements

Having calculated the hourly B.t.u. loss of the building, the next step is to estimate the gas consumption for the season. For this, some new unit figures are available, and they are given in these notes for the first time.

The basis of the unit figures is 1,000 B.t.u. hourly loss from the building. In all calculation work in this field, the various temperature differences involved must be clearly kept in mind in selecting the values which are used. This is not at all difficult, and is merely a matter of being careful to use the right figures throughout.

The B.t.u. input required—i.e. the capacity of the heating equipment required—involves consideration not only of the efficiency of the heating system, but also of the amount of extra capacity needed to take care of quick start under thermostatic control, the heat losses in piping, etc. The general principles laid down in the Third Edition "House Heating" in Table 30 on page 48 and in Section 50 on page 66 can be followed. The B.t.u. required for heating is derived by the application of the following formula:

$$\frac{1{,}000 \text{ B.t.u.} \times 24 \text{ hours}}{\text{Efficiency} \times 55^*} = \text{B.t.u. input required per degree day per 1,000 B.t.u. loss per hour from the building.}$$

Substitution of the proper values in this formula gives rise to the values given in Table 1.

With the constants given in Table 1, the estimation is quite easy. Take the hourly heat loss of the building on the proper basis expressed in thousands of B.t.u., and multiply this by the number of degree days, and again by the constant given in the table. The result will be the B.t.u. required per season. Dividing this by the B.t.u. in each cubic foot of the local gas, the consumption in cubic feet is derived.

In spite of the relative simplicity of this method of estimation, there is a nigger in the woodpile to guard against. This "nigger" is the efficiency to select. At the present time very little information is available on the effect of partial load operation on

* 65 for residences; 55 for 55° day basis and 45 for 45° day basis.

TABLE I

CONSTANTS FOR INDUSTRIAL BUILDING HEATING*

Inside Temp.	*Outside Temp.*	*Time*	*Efficiency*	*B.t.u. Required per Degree Day per 1000 B.t.u. loss per Hour*
70	0	24 hours	80%	**462** on 65-degree day basis
			100 †	**369** on 65-degree day basis
70	0	16 hours	80%	**440** on 65-degree day basis
60	0	8 hours	100 †	**352** on 65-degree day basis
60	0	24 hours	80%	**545** on 55-degree day basis
			90	**485** on 55-degree day basis
			100 †	**436** on 55-degree day basis
60	0	12 hours	80%	**500** on 55-degree day basis
50	0	12 hours	90	**444** on 55-degree day basis
			100 †	**400** on 55-degree day basis
50	0	24 hours	80%	**667** on 45-degree day basis
			90	**593** on 45-degree day basis
			100 †	**533** on 45-degree day basis
50	0	12 hours	80%	**600** on 45-degree day basis
40	0	12 hours	90	**533** on 45-degree day basis
			100 †	**458** on 45-degree day basis

*For other temperatures substitute values in the expression (80% efficiency assumed)

$$\frac{70 \times 462}{\text{Room temperature—Outside temperature}}$$

†100% efficiency used for unvented unit heaters, gas steam radiators, etc.

industrial central heating equipment. The general principle which can safely be followed is that the efficiency will be at or near the 80 per cent level whenever the installation in question is located in the northern territory. It can also be definitely stated that installations in the warmer states will probably operate less efficiently. Just where the border line is to be drawn is yet to be determined.

Another problem is that of selecting the proper efficiency values for unvented unit heaters. It is self-evident that 100 per cent of the energy in the gas is being delivered to the building. It is questionable, however, whether 100 per cent of the energy in the gas is being usefully delivered. Flue gases discharging upwards would tend to go to the nearest monitor or skylight, and collect in the sawteeth or peaks of roofs, making a high ceiling temperature, and increasing the roof heat loss. It will probably be safer to figure a 5 to 10 per cent safety factor, making the efficiency of the unit heater between 90 and 95 per cent. On the other hand, it has been suggested that the use of a suitable elbow on top of the unit heater flue connection might deflect the flue gases in such a way that they will be caught by the air blast through the heater. This would make them mix with the heated air and dilute them, and usefully apply them in building heating. There is room for the design of a suitable connection of this kind which would not result in increasing the pull on the gas flames unduly.

Example in Use of Data

To illustrate the application of the principles just outlined, the following illustration may be followed to advantage. This example recently came up in connection with a proposed estimate for a small factory building. The report was turned in by a house heating salesman who had been trained to calculate the heat loss on a 70° to 0° basis, using the data given in the Appendix of the Third Edition of "House Heating." On this basis, the heat loss of the building worked out to 524,000 B.t.u. per hour.

Since the temperature required was only 50°, the heat loss is
524,000 × 5/7 = 374,300 B.t.u. per hour based on 50° inside and 0° outside temperature.

The plant was to use unit heaters, and to deflect all flue products so that they would come into the path of the air blast, making the efficiency of operation 100 per cent. Referring to Table 1, in the column 50° inside 0° outside 24 hours, 100 per cent efficiency, the value of 533 B.t.u. is found.

The territory in question, according to Table 2-A in "House Heating," Third Edition, page 17, showed 1,100 degree days on a 45° basis. Now multiply

374.3 × 1100 × 533 = 219,452,000 B.t.u. per season.

The B.t.u. value of the gas being 540, the estimated gas consumption for the season works out to be 406,000 cubic feet.

Industrial Publicity

The Publicity Committee, Industrial Gas Section of the American Gas Association, directs attention to the following articles, recently published:

"Creative Art Invades Industry." *Iron Age,* April 10, 1930.

"Combination of Gas Refrigerator and Gas Range." *Industrial Power,* April 1, 1930.

"A Modern Die Casting Plant."

"Gas For Cooking." *Institution Buyer,* April 1, 1930.

"Conveyors Serve Trimming Presses." *Iron Age,* May 29, 1930.

"Gas Furnaces Used in Rolling and Forming Pipe Couplings." *Oil Weekly,* May 16, 1930.

"Develops Grain Flow Control." *Iron Trade,* June 12, 1930.

"Foundry Pours 4000 Tons Monthly." *Iron Trade,* May 22, 1930.

"Controlling the Grain Flow in Forging." *Fuels and Furnaces,* June 1, 1930.

"Cleaning and Bake Finishing Pressed Metal Parts." *Ind. Finishing,* May 1, 1930.

"Installation for Production of Galvanized and Japanned Strip Steel." *Fuels & Furnaces,* July 1, 1930.

"Modern Tile Plant Uses Continuous Gas-Fired Kilns." *Ceramic Age,* August 1, 1930.

"Natural Gas Serves Denver Hospital." *Ind. Power,* April 1, 1930.

"Apparatus Saves Foundry Labor. *Iron Age,* August 14, 1930.

"Ford Makes Own Steel for Automobiles." *Ind. Power,* August 1, 1930.

"Continuous Oven Reduces Core Losses." *Foundry,* August 15, 1930.

"Furnaces for the Carburizing Department. *Machinery,* September 1, 1930.

"Controlling the Grain Flow in Forgings." *Heat Treating & Forging,* July 1, 1930.

"Strip Steel Mill of the Acme Steel Co." *Blast Furnace & Steel Plant,* August 1, 1930.

"Gas-Fired Boiler for Asphalt Plant." *Roads & Streets,* August 1, 1930.

"Heat Fits Unit System of Production at Dresser Plant." *Ind. Power,* Sept. 1, 1930.

The Gas Business is About 30% Machinery and 70% Folks

(Continued from page 453)

for class meetings or group conferences. There is a manual for leaders in charge of these groups, which features the necessity of tying up individual employee experience with the topics discussed from the text. How best to bring all members of the group to apply the principles in their own contacts, is the main function of this manual. No complicated machinery has to be set in motion to accommodate this program to your own company's situation. It fits every company. There is nothing ponderous, intricate or involved about it.

The program will be inaugurated October 1. In the meantime companies are enrolling their employees, one company having already contracted for one thousand units in behalf of an equal number of employees.

The probability of a large enrollment makes it possible for the Association to quote the low charge of $15 for each individual enrolled. This sum covers everything, the manual included. Further information and enrollment blanks may be secured from K. R. Boyes, secretary, American Gas Association, 420 Lexington Avenue, New York, N. Y.

Safety from the Hazard of Fire with Gas Appliances

(Continued from page 449)

5. Practically no difference in wall temperature was noted with thermometers bulbs of the above mentioned dimensions located flush, projecting 1/8" or 1/4" beyond the fire hazard board.

6. The temperature on a wall increases rapidly as an appliance is moved closer to it. A range which was a few degrees over the allowable 90° F. rise above room temperature at six inches distance from the wall increased a maximum of 38° F. when located two inches from the wall, but still gave wall temperatures 64° F. below the figures at which discoloration of materials commonly used in wall construction takes place.

7. An increase in gas pressure of 50 per cent increased the wall temperature approximately 10° F. during comparative tests on a space heater.

8. Room temperature has very little effect on the temperature rise obtained.

9. The type of floor material employed has an appreciable effect on floor temperatures. Of the four materials, wood, concrete, asphalt composition, and linoleum, wood gave the highest reading.

10. Appliances having passed the A. G. A. fire hazard test have a safety factor of nearly 1.5 from scorching and at least 3.0 from ignition temperatures when installed six inches from the wall, as recommended.

Monthly Summary of Gas Company Statistics

FOR MONTH OF JULY, 1930

Issued September, 1930, by the Statistical Department of the American Gas Association
420 Lexington Avenue, New York, N. Y.

PAUL RYAN, Statistician

COMPARATIVE STATISTICS OF 148 MANUFACTURED GAS COMPANIES FOR MONTH OF JULY

	Month of July			*Seven Months Ending July 31*		
	1930	*1929*	*Per cent Increase*	*1930*	*1929 See July*	*Per cent Increase*
Customers	8,850,757	8,744,970	1.2			
Gas Sales (MCF)	25,537,171	25,839,481	— 1.2	213,479,630	210,064,600	1.6
Revenue (Dollars)	28,030,249	27,930,643	0.4	225,704,056	222,897,367	1.3
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	10,700,561	11,286,396	— 5.2	107,629,542	113,296,361	— 5.0
(b) Retort Coal Gas	2,264,197	2,549,031	—11.2	17,768,028	18,449,649	— 3.7
(c) Oil Gas	472,505	458,857	3.0	4,689,902	4,832,600	— 3.0
(d) Coke Oven Gas	3,895,207	3,663,827	6.3	28,188,001	26,529,353	6.3
(e) Reformed Oil Still Gas	136,394	——	—	1,007,756	——	—
(f) Total Gas Produced	17,468,864	17,958,111	— 2.7	159,283,229	163,107,963	— 2.3
Gas Purchased						
(a) Coke Oven Gas	8,710,638	8,989,062	— 3.1	65,613,673	60,298,821	8.8
(b) Oil Still and Natural Gas	151,776	173,041	—12.3	1,211,041	1,491,151	—18.8
(c) Total Gas Purchased	8,862,414	9,162,103	— 3.3	66,824,714	61,789,972	8.1
Total Gas Produced and Purchased	26,331,278	27,120,214	— 2.9	226,107,943	224,897,935	0.5

COMPARATIVE STATISTICS OF 106 NATURAL GAS COMPANIES FOR MONTH OF JULY

Customers						
Domestic (Including House Heating)	3,742,358	3,671,526	1.9			
Commercial	167,659	164,933	1.6			
Industrial	11,027	11,373	— 3.0			
Main Line	1,403	1,171	19.8		*See July*	
Miscellaneous	2,166	1,524	—			
Total	3,924,613	3,850,527	1.9			
Gas Sales (MCF)						
Domestic (Including House Heating)	10,663,344	10,958,164	— 2.7	158,239,192	159,878,048	— 1.0
Commercial	1,411,379	1,545,510	— 8.7	19,348,830	19,145,693	1.1
Industrial	11,702,755	13,607,066	—14.0	89,898,775	94,770,112	— 5.1
Main Line	1,808,193	2,193,947	—17.6	13,157,812	15,503,695	—15.1
Miscellaneous	95,558	107,644	—	1,070,512	1,431,036	—
Total	25,681,229	28,412,331	— 9.6	281,715,121	290,728,584	— 3.1
Revenue (Dollars)						
Domestic (Including House Heating)	8,465,188	8,467,623	— 0.0	107,268,635	107,785,912	— 0.5
Commercial	854,516	948,777	— 9.9	10,749,273	10,646,213	1.0
Industrial	3,117,791	3,812,005	—18.2	25,155,892	27,592,823	— 8.8
Main Line	244,062	271,398	—10.1	1,886,555	2,074,442	— 9.1
Miscellaneous	35,880	42,029	—	465,690	602,581	—
Total	12,717,437	13,541,832	— 6.1	145,526,045	148,701,971	— 2.1
Gas Produced and Purchased (MCF)						
Natural Gas Produced	7,516,341	8,298,548	— 9.4	92,192,296	98,014,811	— 5.9
Natural Gas Purchased	30,137,357	30,670,995	— 1.7	306,993,628	300,167,821	2.3
Natural Gas Produced and Purchased	37,653,698	38,969,543	— 3.4	399,185,924	398,182,632	0.3
Manufactured Gas Produced and Purchased	1,190,121	2,850,496	—58.2	15,050,343	26,564,882	—43.3
Total Gas Produced and Purchased	38,843,819	41,820,039	— 7.1	414,236,267	424,747,514	— 2.5
Company Use and Sales to other Gas Companies	11,303,369	11,330,284	— 0.2	116,759,157	118,422,300	— 1.4
Net Available for Public Distribution	27,540,450	30,489,755	— 9.6	297,577,110	306,325,214	— 2.9

Gas Utility Sales Down in July

THE generally depressed condition of trade and industry during July was reflected in the operating results of both manufactured and natural gas utilities for the month. Reports received by the Statistical Department of the American Gas Association from companies representing 90 per cent of the manufactured gas industry indicate July sales of 25,537,171,000 cu.ft., a decline of 1.2 per cent from July, 1929. A group of the larger natural gas utilities, comprising about 80 per cent of the public utility distribution of natural gas, report July sales of 25,681,229,000 cu.ft., a decrease of 9.6 per cent in natural gas sales from the same month of the preceding year.

This sales decline in both branches of the industry was the result in the main of marked decreases in sales of gas for industrial and commercial uses. This was particularly true of the natural gas companies, where the proportion of industrial and commercial business is relatively much greater. For this group commercial sales for July, that is sales to hotels, restaurants, small shops, etc. were down 8.7 per cent from a year ago; industrial sales decreased 14 per cent, while main line sales to large scale or wholesale industrial customers registered a decrease of nearly 18 per cent for the month.

In consequence of the fact that industrial and commercial business, in which the sales decline was most pronounced, is sold at less than average rates, owing to the lower costs to the companies of handling this business, the decline in revenues was materially less than indicated by the sales figures. The July revenues for the natural gas companies declined only 6 per cent for the year, as contrasted with a 9.6 per cent drop in sales, while for the manufactured gas group, revenues were substantially unchanged, aggregating about $28,000,000 in July of both years.

While natural gas distributed by public utility systems comprises less than 25 per cent of the entire production, the same general tendencies seemed to have characterized other uses of this product, such as carbon black manufacture and field operations, as the total production of natural gas for July is provisionally estimated at 153,000,000,000 cu.ft., a decrease of 4.2 per cent from a year ago. In marked contrast to these factors, however, is the rapid increase in the use of natural gas for the generation of electric power. In July the quantity of natural gas consumed in electric power plants aggregated 10,424,248,000 cu.ft., an increase of nearly 18 per cent from a year ago, and this despite the fact that the total production of electric power during that month was 3 per cent below July 1929.

GROUP A—NEW ENGLAND STATES

(Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.)

(Data reported by 35 companies whose sales constitute 80% of the total sales of manufactured gas in the New England States.)

	Month of July			*Seven Months Ending July 31*		
Customers	*1930*	*1929*	*Per cent Increase*	*1930*	*1929*	*Per cent Increase*
Domestic	1,029,653	1,026,092	0.3			
House Heating	5,422	4,071	33.2			
Industrial and Commercial	35,414	36,318	— 2.5		*See July*	
Miscellaneous	429	224	—			
Total (34 companies which segregate)	1,070,919	1,066,705	0.4			
Grand Total (35 companies)	1,104,692	1,100,405	0.4			
Gas Sales (MCF)						
Domestic	2,125,601	2,073,931	2.5	15,152,545	14,580,841	3.9
House Heating	18,086	11,648	55.3	2,035,960	1,474,968	38.0
Industrial and Commercial	466,252	527,699	—11.6	3,699,723	4,031,621	— 8.2
Miscellaneous	17,650	17,952	—	172,393	172,804	—
Total (34 companies which segregate)	2,627,590	2,631,230	— 0.1	21,060,622	20,260,234	4.0
Grand Total (35 companies)	2,698,774	2,706,522	— 0.3	21,686,690	20,855,032	4.0
Revenue (Dollars)						
Domestic	2,820,236	2,733,939	3.2	19,717,257	19,011,244	3.7
House Heating	19,077	10,073	89.4	1,657,914	1,187,309	39.6
Industrial and Commercial	449,368	524,689	—14.3	3,517,005	4,069,578	—13.6
Miscellaneous	13,729	19,340	—	117,997	141,797	—
Total (34 companies which segregate)	3,302,410	3,288,041	0.4	25,010,173	24,409,928	2.5
Grand Total (35 companies)	3,389,694	3,375,987	0.4	25,706,241	25,082,027	2.5
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	1,241,164	1,084,375	14.5	10,228,323	9,746,063	4.9
(b) Retort Coal Gas	541,349	697,470	—22.4	4,812,476	4,885,792	— 1.5
(c) Oil Gas	——	——	—	438	——	—
(d) Coke Oven Gas	278,595	307,727	— 9.5	2,463,810	2,094,524	17.6
(e) Total Gas Produced	2,061,108	2,089,572	— 1.4	17,505,047	16,726,379	4.7
Coke Oven Gas Purchased	914,588	850,186	7.6	6,170,397	5,877,785	5.0
Total Gas Produced and Purchased	2,975,696	2,939,758	1.2	23,675,444	22,604,164	4.7

NOTE: Of the thirty-five companies reporting, thirty-four segregate customers, sales and revenue monthly, and one company reports only totals. The data shown above for domestic, house heating, industrial-commercial classifications are based only on the reports of the thirty-four companies which segregate returns.

GROUP B—MIDDLE ATLANTIC STATES

(New Jersey, New York and Pennsylvania.)

(Data reported by 35 companies whose sales constitute 91% of the total sales of manufactured gas in the Middle Atlantic States.)

	Month of July			Seven Months Ending July 31		
	1930	1929	Per cent Increase	1930	1929	Per cent Increase
Customers	3,981,619	3,933,344	1.2		See July	
Gas Sales (MCF)	10,321,888	10,006,123	3.2	87,977,784	85,418,736	3.0
Revenue (Dollars)	12,153,560	11,748,939	3.4	99,752,195	97,898,397	1.9
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	5,637,644	5,841,821	— 3.5	54,086,028	57,390,113	— 5.8
(b) Retort Coal Gas	678,930	674,773	0.6	5,100,141	5,167,790	— 1.3
(c) Coke Oven Gas	1,919,212	1,840,754	4.3	13,628,715	12,858,751	6.0
(d) Oil Still Gas	136,394	——	—	1,007,756	——	—
(e) Total Gas Produced	8,372,180	8,357,349	0.2	73,822,640	75,416,654	— 2.1
Gas Purchased						
(a) Coke Oven Gas	2,139,257	2,156,594	— 0.8	17,794,855	15,194,522	17.1
(b) Oil Still and Natural Gas	97,237	138,106	—29.6	939,896	1,221,530	—23.0
(c) Total Gas Purchased	2,236,494	2,294,700	— 2.5	18,734,751	16,416,052	14.1
Total Gas Produced and Purchased	10,608,674	10,652,048	— 0.4	92,557,391	91,832,706	0.8

GROUP C—EAST NORTH CENTRAL STATES

(Illinois, Indiana, Michigan, Ohio and Wisconsin.)

(Data reported by 37 companies whose sales constitute 90% of the total sales of manufactured gas in the East North Central States.)

Customers						
Domestic	2,441,550	2,405,070	1.5			
House Heating	9,325	7,374	26.5			
Industrial and Commercial	114,393	114,777	— 0.3		See July	
Miscellaneous	412	401	—			
Total (36 companies which segregate)	2,565,680	2,527,622	1.5			
Grand Total (37 companies)	2,587,414	2,548,619	1.5			
Gas Sales (MCF)						
Domestic	6,171,511	6,204,870	— 0.5	46,505,522	46,247,706	0.6
House Heating	42,230	36,216	16.6	3,784,597	3,225,786	17.3
Industrial and Commercial	2,460,964	2,986,453	—17.6	19,836,896	21,075,662	— 5.9
Miscellaneous	10,409	10,003	—	91,852	103,945	—
Total (36 companies which segregate)	8,685,114	9,237,542	— 6.0	70,218,867	70,653,099	— 0.6
Grand Total (37 companies)	8,760,276	9,306,787	— 5.9	70,746,551	71,174,721	— 0.6
Revenue (Dollars)						
Domestic	6,660,407	6,672,785	— 0.2	49,296,872	48,896,304	0.8
House Heating	37,735	32,313	16.8	2,915,343	2,494,265	16.9
Industrial and Commercial	1,888,616	2,195,661	—14.0	14,968,068	15,571,344	3.9
Miscellaneous	9,280	8,922	—	79,967	89,058	—
Total (36 companies which segregate)	8,596,038	8,909,681	— 3.5	67,260,250	67,050,971	0.3
Grand Total (37 companies)	8,664,771	8,973,666	— 3.4	67,745,527	67,531,725	0.3
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	1,818,745	2,486,663	—26.9	23,496,728	27,833,821	—15.6
(b) Retort Coal Gas	874,732	994,619	—12.1	6,543,894	7,029,765	— 6.9
(c) Coke Oven Gas	1,638,063	1,458,551	12.3	11,707,011	11,191,320	4.6
(d) Other Gas	2,322	2,515	— 7.7	10,243	11,034	— 7.2
(e) Total Gas Produced	4,333,862	4,942,348	—12.3	41,757,876	46,065,940	— 9.4
Gas Purchased						
(a) Coke Oven Gas	4,550,460	4,625,166	— 1.6	32,976,925	29,902,542	10.3
(b) Oil and Natural Gas	51,948	34,935	—	259,226	269,621	—
(c) Total Gas Purchased	4,602,408	4,660,101	— 1.2	33,236,151	30,172,163	10.2
Total Gas Produced and Purchased	8,936,270	9,602,449	— 6.9	74,994,027	76,238,103	— 1.6

NOTE: Of the thirty-seven companies reporting thirty-six segregate customers, sales and revenue monthly, and one reports only totals. The data shown above for domestic, house heating, industrial-commercial classifications are based on the reports of the thirty-six companies which segregate returns.

GROUP D— WEST NORTH CENTRAL STATES

(States Covered: Iowa, Minnesota, Missouri, Nebraska and North Dakota.)

(Data reported by 12 companies whose sales constitute 60% of the total sales of manufactured gas in the West North Central States.)

	Month of July			Seven Months Ending July 31		
	1930	1929	Per cent Increase	1930	1929	Per cent Increase
Customers	407,311	398,012	2.3		See July	
Gas Sales (MCF)	1,129,313	1,123,540	0.5	9,174,727	8,751,736	4.8
Revenue (Dollars)	1,202,427	1,173,127	2.5	9,383,537	9,007,302	4.2
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	836,911	834,848	0.2	7,421,122	7,042,144	5.4
(b) Retort Coal Gas	50,601	59,529	—15.0	371,840	418,275	—11.1
(c) Total Gas Produced	887,512	894,377	— 0.8	7,792,962	7,460,419	4.5
Coke Oven Gas Purchased	203,141	206,199	— 1.5	1,602,951	1,623,478	— 1.3
Total Gas Produced and Purchased	1,090,653	1,100,576	— 0.9	9,395,913	9,083,897	3.4

GROUP E—SOUTH ATLANTIC STATES

(States Covered: Delaware, Dist. of Columbia, Florida, Georgia, Maryland, No. Carolina, So. Carolina and Virginia.)

(Data reported by 16 companies whose sales constitute 76% of the total sales of manufactured gas in the South Atlantic States.)

Customers	476,399	468,578	1.7		See July	
Gas Sales (MCF)	1,599,581	1,630,640	— 1.9	14,634,405	14,577,462	0.4
Revenue (Dollars)	1,604,071	1,630,590	— 1.6	14,445,560	14,606,153	— 1.1
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	1,017,092	883,608	15.1	11,120,822	10,049,084	10.7
(b) Retort Coal Gas	50,020	57,705	—13.3	408,428	426,780	— 4.3
(c) Total Gas Produced	1,067,112	941,313	13.4	11,529,250	10,475,864	10.1
Coke Oven Gas Purchased	563,114	753,220	—25.2	4,061,168	4,796,236	—15.3
Total Gas Produced and Purchased	1,630,226	1,694,533	— 3.8	15,590,418	15,272,100	2.1

GROUP F—SOUTH CENTRAL AND MOUNTAIN STATES

(States Covered: Alabama, Arizona, Idaho, Nevada and Tennessee.)

(Data reported by 7 companies whose sales constitute 61% of the total sales of manufactured gas in the South Central and Mountain States.)

Customers	77,152	76,286	1.1		See July	
Gas Sales (MCF)	418,307	475,658	—12.1	3,710,248	3,618,547	2.5
Revenue (Dollars)	300,785	329,542	— 8.7	2,770,500	2,743,256	1.0
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	28,088	32,159	—12.7	247,438	235,454	5.1
(b) Retort Coal Gas	42,477	43,267	— 1.8	357,656	359,292	— 0.5
(c) Oil Gas	35,707	35,889	— 0.5	384,862	374,649	2.7
(d) Total Gas Produced	106,272	111,315	— 4.5	989,956	969,395	2.1
Gas Purchased						
(a) Coke Oven Gas	340,078	397,697	—14.5	3,007,377	2,904,258	3.5
(b) Natural Gas	2,591	——	—	11,919	——	—
(c) Total Gas Purchased	342,669	397,697	—13.8	3,019,296	2,904,258	4.0
Total Gas Produced and Purchased	448,940	509,012	—11.8	4,009,252	3,873,654	3.5

GROUP I—PACIFIC COAST STATES

(California, Oregon and Washington.)

(Data reported by 6 companies whose sales constitute 86% of the total sales of manufactured gas in the Pacific Coast States.)

Customers	216,170	219,726	— 1.6		See July	
Gas Sales (MCF)	609,032	590,211	3.2	5,549,225	5,668,366	— 2.1
Revenue (Dollars)	714,941	698,792	2.3	5,900,496	6,028,507	— 2.1
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	120,917	122,922	— 1.6	1,029,081	999,682	2.9
(b) Retort Coal Gas	26,088	21,668	20.4	173,593	161,955	7.2
(c) Oil Gas	434,476	420,453	3.3	4,294,359	4,446,917	— 3.4
(d) Coke Oven Gas	59,337	56,795	4.5	388,465	384,758	1.0
(e) Total Gas Produced	640,818	621,838	3.1	5,885,498	5,993,312	— 1.8

STATE OF MASSACHUSETTS

(Data reported by 14 companies whose sales constitute 82% of the total sales of manufactured gas in the state of Massachusetts.)

	Month of July			Seven Months Ending July 31		
	1930	1929	Per cent Increase	1930	1929	Per cent Increase
Customers						
Domestic	654,366	655,304	— 0.1			
House Heating	3,543	2,722	30.2			
Industrial and Commercial	19,066	20,507	— 7.0		*See July*	
Miscellaneous	102	10	—			
Total (13 companies which segregate)	677,077	678,543	— 0.2			
Grand Total (14 companies)	710,851	712,243	— 0.2			
Gas Sales (MCF)						
Domestic	1,319,605	1,277,702	3.3	9,497,153	9,047,331	5.0
House Heating	10.760	7,553	42.4	1,265,155	884,581	43.0
Industrial and Commercial	251,417	300,417	—16.3	2,025,888	2,307,178	—12.2
Miscellaneous	15,320	15,343	—	149,060	148,771	—
Total (13 companies which segregate)	1,597,102	1,601,015	— 0.2	12,937,256	12,387,861	4.4
Grand Total (14 companies)	1,668,286	1,676,309	— 0.5	13,563,363	12,982,691	4.5
Revenue (Dollars)						
Domestic	1,725,008	1,657,875	4.0	12,183,623	11,644,151	4.6
House Heating	12,241	6,461	89.5	1,049,312	712,250	47.3
Industrial and Commercial	243,451	310,963	—21.7	1,933,390	2,428,632	—20.4
Miscellaneous	11,540	15,650	—	94,804	113,044	—
Total (13 companies which segregate)	1,992,240	1,990,950	0.1	15,261,129	14,898,077	2.4
Grand Total (14 companies)	2,079,520	2,078,896	0.0	15,957,587	15,570,270	2.5
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	808,514	714,145	13.2	6,973,052	6,657,046	4.7
(b) Retort Coal Gas	450,280	534,823	—15.8	3,910,320	3,624,569	7.8
(c) Coke Oven Gas	64,675	68,639	— 5.7	439,750	443,987	— 1.0
(d) Total Gas Produced	1,323,469	1,317,607	0.4	11,323,122	10,725,602	5.6
Coke Oven Gas Purchased	575,519	496,588	15.9	3,656,578	3,416,173	7.0
Total Gas Produced and Purchased	1,898,988	1,814,195	4.7	14,979,700	14,141,775	5.9

NOTE: Of the fourteen companies reporting, thirteen segregate customers, sales and revenue monthly, and one company reports only totals. The data shown above for domestic, house heating, industrial-commercial classifications are based on the reports of the thirteen companies which segregate returns.

STATE OF CONNECTICUT

(Data reported by 7 companies whose sales constitute 75% of the total sales of manufactured gas in the state of Connecticut.)

Customers						
Domestic	193,431	190,035	1.8			
House Heating	880	532	65.4			
Industrial and Commercial	7,603	6,834	11.2		*See July*	
Miscellaneous	117	135	—			
Total	202,031	197,536	2.3			
Gas Sales (MCF)						
Domestic	445,975	445,323	0.1	3,165,499	3,081,388	2.7
House Heating	4,934	2,603	89.5	403,521	264,961	52.3
Industrial and Commercial	110,919	117,273	— 5.4	845,195	867,585	— 2.6
Miscellaneous	1,027	1,771	—	9,551	15,845	—
Total	562,855	566,970	— 0.7	4,423,766	4,229,779	4.6
Revenue (Dollars)						
Domestic	587,530	578,936	1.4	4,086,890	3,976,956	2.8
House Heating	4,747	2,298	106.6	326,606	222,670	46.7
Industrial and Commercial	105,078	106,772	— 1.6	786,323	800,756	— 1.8
Miscellaneous	894	1,388	—	8,946	12,281	—
Total	698,249	689,394	1.3	5,208,765	5,012,663	3.9
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	210,188	200,691	4.7	1,866,229	1,733,555	7.7
(b) Retort Coal Gas	27,559	31,399	—12.2	280,095	280,634	— 0.2
(c) Total Gas Produced	237,747	232,090	2.4	2,146,324	2,014,189	6.6
Coke Oven Gas Purchased	339,069	353,598	— 4.1	2,513,819	2,461,612	2.1
Total Gas Produced and Purchased	576,816	585,688	— 1.5	4,660,143	4 475,801	4.1

STATE OF NEW YORK

(Data reported by 16 companies whose sales constitute 92% of the total sales of manufactured gas in the state of New York.)

	Month of July			*Seven Months Ending July 31*		
	1930	*1929*	*Per cent Increase*	*1930*	*1929*	*Per cent Increase*
Customers	2,312,318	2,288,128	1.1		*See July*	
Gas Sales (MCF)	5,690,743	5,635,989	1.0	50,799,647	49,877,522	1.8
Revenue (Dollars)	6,703,499	6,621,707	1.2	57,948,833	57,594,395	0.6
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	3,039,358	3,141,737	— 3.3	32,314,120	33,613,380	— 3.9
(b) Retort Coal Gas	597,358	609,057	— 1.9	4,332,455	4,226,994	2.5
(c) Coke Oven Gas	1,832,985	1,758,929	4.2	13,045,855	12,279,426	6.2
(d) Total Gas Produced	5,469,701	5,509,723	— 0.7	49,692,430	50,119,800	— 0.9
Coke Oven Gas Purchased	309,877	304,237	1.8	2,482,601	2,305,306	7.7
Total Gas Produced and Purchased	5,779,578	5,813,960	— 0.6	52,175,031	52,425,106	— 0.5

STATE OF NEW JERSEY

(Data reported by 6 companies whose sales constitute 97% of the total sales of manufactured gas in the state of New Jersey.)

Customers	898,334	886,889	1.3		*See July*	
Gas Sales (MCF)	2,406,758	2,242,746	7.3	17,695,562	17,026,828	3.9
Revenue (Dollars)	3,060,215	2,854,445	7.2	21,654,813	20,907,855	3.6
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	1,621,231	1,469,595	10.3	12,225,284	11,841,688	3.2
(b) Retort Coal Gas	5,177	4,979	4.0	34,830	33,926	2.7
(c) Total Gas Produced	1,626,408	1,474,574	10.3	12,260,114	11,875,614	3.2
Coke Oven Gas Purchased	896,149	1,081,559	—17.1	7,161,369	7,261,421	— 1.4
Total Gas Produced and Purchased	2,522,557	2,556,133	— 1.3	19,421,483	19,137,035	1.5

STATE OF PENNSYLVANIA

(Data reported by 13 companies whose sales constitute 90% of the total sales of manufactured gas in the state of Pennsylvania.)

Customers	770,967	758,327	1.7		*See July*	
Gas Sales (MCF)	2,224,387	2,127,388	4.6	19,482,575	18,514,386	5.2
Revenue (Dollars)	2,389,846	2,272,787	5.1	20,148,549	19,396,147	3.9
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	977,055	1,230,489	—20.6	9,546,624	11,935,045	—20.0
(b) Retort Coal Gas	76,395	60,737	25.8	732,856	906,870	—19.2
(c) Coke Oven Gas	86,227	81,825	5.4	582,860	579,325	0.6
(d) Oil Still Gas	136,394	——	—	1,007,756	——	—
(e) Total Gas Produced	1,276,071	1,373,051	— 7.1	11,870,096	13,421,240	—11.6
Gas Purchased						
(a) Coke Oven Gas	933,231	770,798	21.1	8,150,885	5,627,795	44.8
(b) Oil Still and Natural Gas	97,237	138,106	—29.6	939,896	1,221,530	—23.1
(c) Total Gas Purchased	1,030,468	908,904	13.4	9,090,781	6,849,325	32.7
Total Gas Produced and Purchased	2,306,539	2,281,955	1.1	20,960,877	20,270,565	3.4

STATE OF CALIFORNIA

(Data reported by 5 natural gas companies and 1 manufactured gas company.)

Customers	1,238,820	1,202,451	3.0		*See July*	
Gas Sales (MCF)	6,306,618	6,914,063	— 8.8	58,084,422	62,778,363	— 7.5
Revenue (Dollars)	3,628,565	3,828,894	— 5.2	35,662,639	38,768,242	— 8.0
Gas Produced and Purchased (MCF)						
Natural Gas Purchased	8,695,502	7,587,052	14.6	74,224,900	68,702,089	8.0
Oil and Water Gas Produced	298,849	1,830,306	—83.7	5,184,577	16,839,537	—69.2
Total Gas Produced and Purchased	8,994,351	9,417,358	— 4.5	79,409,477	85,541,626	— 7.2
Company Use and Sales to other Gas Companies	1,882,548	1,531,477	—	15,701,472	16,684,029	—
Net Available for Public Distribution	7,111,803	7,885,881	— 9.8	63,708,005	68,857,597	— 7.5

NOTE: In compiling figures on manufactured gas companies in the United States and in the Pacific Coast States, data on the five natural gas companies in California were not included; however, these data were included in the tabulation covering the operations of the Natural Gas Companies.

STATE OF ILLINOIS

(Data reported by 12 companies whose sales constitute 97% of the total sales of manufactured gas in the state of Illinois.)

	Month of July			Seven Months Ending July 31		
	1930	1929	Per cent Increase	1930	1929	Per cent Increase
Customers						
Domestic	1,260,073	1,240,197	1.6			
House Heating	5,796	4,960	16.9			
Industrial and Commercial	71,940	75,431	— 4.6		*See July*	
Miscellaneous	194	185	—			
Total	1,338,003	1,320,773	1.3			
Gas Sales (MCF)						
Domestic	2,957,309	2,946,905	0.4	22,083,792	22,079,555	0.0
House Heating	15,817	15,235	3.8	2,617,650	2,256,323	16.0
Industrial and Commercial	1,304,690	1,466,196	—11.0	10,137,156	10,282,496	— 1.4
Miscellaneous	8,275	7,933	—	71,814	83,084	—
Total	4,286,091	4,436,269	— 3.4	34,910,412	34,701,458	0.6
Revenue (Dollars)						
Domestic	3,337,344	3,319,197	0.5	24,584,678	24,445,224	0.6
House Heating	14,400	14,424	— 0.2	2,051,572	1,781,596	15.2
Industrial and Commercial	1,022,065	1,105,594	— 7.6	7,856,482	7,816,352	0.5
Miscellaneous	4,940	4,824	—	42,636	51,158	—
Total	4,378,749	4,444,039	— 1.5	34,535,368	34,094,330	1.3
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	976,130	1,041,875	— 6.3	11,810,014	13,094,397	— 9.8
(b) Retort Coal Gas	84,334	84,384	— 0.1	556,192	684,635	—18.8
(c) Coke Oven Gas	864,480	694,044	24.6	6,012,991	5,745,178	4.7
(d) Total Gas Produced	1,924,944	1,820,303	5.7	18,379,197	19,524,210	— 5.9
Gas Purchased						
(a) Coke Oven Gas	2,410,705	2,708,541	—11.0	18,387,895	17,534,770	4.9
(b) Natural Gas	7,134	8,258	—13.6	49,502	51,388	— 3.7
(c) Total Gas Purchased	2,417,839	2,716,799	—11.0	18,437,397	17,586,158	4.8
Total Gas Produced and Purchased	4,342,783	4,537,102	— 4.3	36,816,594	37,110,368	— 0.8

STATE OF WISCONSIN

(Data reported by 8 companies whose sales constitute 91% of the total sales of manufactured gas in the state of Wisconsin.)

Customers						
Domestic	279,402	273,373	2.2			
House Heating	1,416	697	103.2		*See July*	
Industrial and Commercial	11,431	9,939	15.0			
Total	292,249	284,009	2.9			
Gas Sales (MCF)						
Domestic	738,277	725,284	1.8	5,289,088	5,058,685	4.6
House Heating	6,266	3,580	75.0	302,007	261,932	15.3
Industrial and Commercial	238,028	287,828	—17.3	1,990,500	2,122,880	— 6.2
Miscellaneous	73	——	—	288	——	—
Total	982,644	1,016,692	— 3.3	7,581,883	7,443,497	1.9
Revenue (Dollars)						
Domestic	790,236	776,144	1.9	5,569,189	5,329,809	4.5
House Heating	6,007	3,246	87.2	214,774	182,985	17.4
Industrial and Commercial	173,832	201,036	—13.5	1,410,692	1,470,372	— 4.1
Miscellaneous	36	——	—	146	——	—
Total	970,181	980,426	— 1.0	7,194,801	6,983,166	3.0
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	161,512	154,726	4.4	1,798,221	2,887,407	—37.7
(b) Retort Coal Gas	370,999	437,067	—15.1	2,865,755	3,002,005	— 4.5
(c) Coke Oven Gas	40,501	——	—	271,281	——	—
(d) Total Gas Produced	573,012	591,793	— 3.2	4,935,257	5,889,412	—16.2
Coke Oven Gas Purchased	497,461	528,214	— 5.8	3,716,369	2,632,785	41.2
Total Gas Produced and Purchased	1,070,473	1,120,007	— 4.4	8,651,626	8,522,197	1.5

STATE OF INDIANA

(Data reported by 10 companies whose sales constitute 95% of the total sales of manufactured gas in the state of Indiana.)

	Month of July			Seven Months Ending July 31		
Customers	*1930*	*1929*	*Per cent Increase*	*1930*	*1929*	*Per cent Increase*
Domestic	276,399	271,882	1.7			
House Heating	797	645	23.6			
Industrial and Commercial	11,480	10,973	4.6		*See July*	
Miscellaneous	198	193	—			
Total (9 companies which segregate)	288,874	283,693	1.8			
Grand Total (10 companies)	310,608	304,690	1.9			
Gas Sales (MCF)						
Domestic	630,288	625,158	0.8	4,599,054	4,462,147	3.1
House Heating	5,804	5,179	12.1	247,584	203,319	21.8
Industrial and Commercial	301,556	395,581	—23.8	2,446,855	2,718,370	—10.0
Miscellaneous	1,566	1,309	—	14,588	14,466	—
Total (9 companies which segregate)	939,214	1,027,227	— 8.6	7,308,081	7,398,302	— 1.2
Grand Total (10 companies)	1,014,367	1,096,470	— 7.5	7,835,757	7,919,929	— 1.1
Revenue (Dollars)						
Domestic	760,534	759,754	0.1	5,475,698	5,362,651	2.1
House Heating	5,591	4,811	16.2	185,119	150,538	23.0
Industrial and Commercial	233,890	277,131	—15.6	1,872,981	1,961,036	— 4.5
Miscellaneous	1,762	1,452	—	16,168	15,608	—
Total (9 companies which segregate)	1,001,777	1,043,148	— 4.0	7,549,966	7,489,833	0.8
Grand Total (10 companies)	1,070,509	1,107,131	— 3.3	8,034,970	7,970,584	0.8
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	353,923	421,536	—16.0	3,070,505	3,227,416	— 4.9
(b) Retort Coal Gas	33,570	42,312	—20.7	246,556	363,513	—32.2
(c) Coke Oven Gas	300,885	340,152	—11.5	2,270,209	2,423,744	— 6.3
(d) Other Gas	2,102	2,278	—	8,470	9,179	—
(e) Total Gas Produced	690,480	806,278	—14.4	5,595,740	6,023,852	— 7.1
Gas Purchased						
(a) Coke Oven Gas	327,931	369,582	—11.3	2,914,696	2,791,958	4.4
(b) Oil Still and Natural Gas	18,551	962	—	26,613	8,135	—
(c) Total Gas Purchased	346,482	370,544	— 6.5	2,941,309	2,800,093	5.0
Total Gas Produced and Purchased	1,036,962	1,176,822	—11.9	8,537,049	8,823,945	— 3.3

NOTE: Of the ten reporting companies, nine segregate customers, sales and revenue monthly while one company reports only totals. The data shown above for the domestic, house heating and industrial-commercial classifications are based only on the reports of the nine companies which segregate returns.

STATE OF MICHIGAN

(Data reported by 6 companies whose sales constitute 93% of the total sales of manufactured gas in the state of Michigan.)

Customers						
Domestic	610,824	604,934	1.0			
House Heating	1,315	1,071	22.8		*See July*	
Industrial and Commercial	18,831	17,697	6.4			
Total	630,970	623,702	1.2			
Gas Sales (MCF)						
Domestic	1,812,847	1,872,188	— 3.2	14,280,157	14,381,298	— 0.7
House Heating	14,316	12,151	17.8	609,403	500,182	21.8
Industrial and Commercial	609,761	829,372	—26.5	5,203,811	5,894,657	—11.7
Miscellaneous	378	554	—	3,762	4,700	—
Total	2,437,302	2,714,265	—10.2	20,097,133	20,780,837	— 3.3
Revenue (Dollars)						
Domestic	1,725,156	1,767,583	— 2.4	13,313,042	13,389,183	— 0.6
House Heating	11,646	9,819	18.6	457,933	376,157	21.7
Industrial and Commercial	451,860	604,502	—25.3	3,770,563	4,266,832	—11.6
Miscellaneous	2,406	2,423	—	19,466	20,514	—
Total	2,191,068	2,384,327	— 8.1	17,561,004	18,052,686	— 2.7
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	311,785	849,037	—63.3	6,680,451	8,465,619	—21.1
(b) Retort Coal Gas	385,829	430,856	—10.5	2,875,391	2,979,612	— 3.5
(c) Coke Oven Gas	432,197	424,355	1.8	3,152,530	3,022,398	4.3
(d) Other Gas	220	237	—	1,773	1,855	—
(e) Total Gas Produced	1,130,031	1,704,485	—33.7	12,710,145	14,469,484	—12.2
Coke Oven Gas Purchased	1,314,363	1,018,829	29.0	7,926,259	6,943,029	14.2
Total Gas Produced and Purchased	2,444,394	2,723,314	—10.2	20,636,404	21,412,513	— 3.6

Associations Affiliated with A. G. A.

Canadian Gas Association
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Sec.-Tr.—G. W. Allen, 21 Astley Avenue, Toronto.

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Sec.-Tr.—O. A. Weller, Public Service Co. of Colo., Denver, Colo.

Empire State Gas and Electric Association
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Chairman Gas Section—M. F. Clement, Rockland Light & Power Co., Middletown, Ind.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.

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Indiana Gas Association
Pres.—C. L. Kirk, Citizens Gas Co., Indianapolis, Ind.
Sec.-Tr.—F. W. Budd, Central Indiana Gas Co., Muncie, Ind.

Michigan Gas Association
Pres.—Prof. A. H. White, University of Michigan, Ann Arbor, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.

Maryland Utilities Association
Pres.—R. E. Town, Frederick, Md.
Sec.—D. E. Kinnear, 803 Court Square Bldg., Baltimore, Md.

Mid-West Gas Association
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Missouri Association of Public Utilities
Pres.—H. M. Patton, Union Electric Light & Power Co., St. Louis, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Asst. Sec.—Jesse Blythe, 103 West High St., Jefferson City, Mo.

New England Gas Association
Pres.—H. Vittinghoff, Stone & Webster, Inc., Boston, Mass.
Exec. Sec.—C. D. Williams, 41 Mount Vernon St., Boston, Mass.
Chairman Operating Div.—A. S. Hall, Springfield Gas Light Co., Springfield, Mass.
Secretary Operating Division—Paul Buchanan, Hartford Gas Co., Hartford, Conn.
Chairman Sales Div.—J. H. Sumner, Cambridge Gas Light Co., Cambridge, Mass.
Sec.-Tr. Sales Div.—A. M. Slattery, Hoffman Heater Co., Boston, Mass.
Chairman Industrial Div.—L. E. Wagner, Providence Gas Co., Providence, R. I.
Sec.-Tr. Industrial Div.—Charles S. Hilton, Pawtucket Gas Co., Pawtucket, R. I.
Chairman Acctg. Div.—Burton Smart, Portland Gas Light Co., Portland, Me.
Sec.-Treas. Acctg. Div.—Otto Price, Boston Consolidated Gas Co., Boston, Mass.
Chairman Manufacturer Div.—J. D. Taylor, Walker & Pratt Mfg. Co., Boston, Mass.
Sec.-Treas. Manufacturers Div.—J. H. McPherson, 250 Stuart St., Boston, Mass.

New Jersey Gas Association
Pres.—Chester Grey, Atlantic City Gas Company, Atlantic City, N. J.
Sec.-Tr.—H. E. Cliff, Public Service Electric & Gas Co., Newark, N. J.

Ohio Gas and Oil Men's Association
Pres.—L. K. Langdon, Union Gas & Electric Co., Cincinnati, Ohio.
Sec.-Tr.—Wm. H. Thompson, 811 First National Bank Bldg., Columbus, Ohio.

Oklahoma Utilities Association
Pres.—T. H. Steffens, Sand Springs Railway Co., Sand Springs, Okla.
Mgr.—E. F. McKay, 1020 Petroleum Bldg., Oklahoma City, Okla.

Pacific Coast Gas Association
Pres.—R. E. Fisher, Pacific Gas & Electric Co., San Francisco, Calif.
Mang. Dir.—Clifford Johnstone, 447 Sutter St., San Francisco, Calif.

Pennsylvania Gas Association
Pres.—E. G. Boyer, Philadelphia Electric Co., Philadelphia, Pa.
Sec.-Tr.—Frank W. Lesley, Pennsylvania Gas & Electric Co., York, Pa.

Pennsylvania Natural Gas Men's Association
Pres.—George E. Welker, United Natural Gas Co., Oil City, Pa.
Sec.-Tr.—B. H. Smyers, Jr., 435 Sixth Ave., Pittsburgh, Pa.

Southern Gas Association
Pres.—A. J. Goss, Chattanooga Gas Co., Chattanooga, Tenn.
Sec.-Tr.—G. H. Schlatter, Birmingham Gas Co., Birmingham, Ala.

Southwestern Public Service Association
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Pres.—C. B. Short, Roanoke Railway and Electric Co., Roanoke, Va.
Sec.—C. O. Robertson, P. O. Box 537, Roanoke, Va.

Wisconsin Utilities Association
Pres.—M. H. Frank, Wisconsin Power & Light Co., Madison, Wis.
Exec. Sec.—J. N. Cadby, 105 Wells St., Milwaukee, Wis.

Twelfth Annual Convention of the American Gas Association
Atlantic City, N. J. - - - October 13-17, 1930

Employment Bureau

SERVICES REQUIRED

Experienced industrial gas **salesmen** for large operating gas company. **0163.**

Sales engineers to handle line of motor operated valves, low temperature pressure and combustion safety controllers. Men 25 to 35 years with college training preferred. Familiarity with process control field advantageous. **0167.**

One, two or three **salesmen** familiar with house heating; would like to interview those who have held similar positions with gas companies. Salary according to experience and ability. **0171.**

Experienced gas appliance **salesmen** wanted by Holding Company for service in small gas plants. Only men who can sell and are ambitious are desired. Salary and commission. Write full qualification. **0172.**

Rate specialist with accounting, legal and engineering knowledge. Experience and good personality essential; position requires traveling; salary commensurate with qualifications. Include references with application. **0174.**

Experienced house-heating **sales engineer.** State age and qualifications. Location: Kentucky and Tennessee. New natural gas territory. State salary and commission desired. **0175.**

Experienced gas appliance **salesman.** State age and qualifications. Location: Kentucky and Tennessee. New natural gas territory. State salary and commission desired. **0176.**

Manager for small gas property in the Southeast owned by holding company. State experience, references, and salary desired. **0177.**

High grade man with adequate education and experience to take charge of relatively large property; position is chiefly **managerial** but requires good engineering background. **0178.**

Rate engineer for company in middle West; knowledge of rate making and rate structure necessary and engineering and accounting experience desirable. Salary about $4,000. **0179.**

Practical experienced industrial gas equipment **salesman** for established line of burners, and special equipment. Headquarters, New York City. Write fully as to experience, etc. **0180.**

Immediate opening for industrial **sales engineer** with from three to five years experience. Twenty-seven to thirty-two years old preferred. Must have ability to analyze industrial requirements and close sales. Utility sells gas only in largest industrial center in the South. Give details of education, experience and compensation expected in first letter. **0181.**

General Manager or Operating Vice-President for well-established Natural Gas Company wholesaling its product in Appalachian field. Must have had actual experience, have good personality, be capable executive, good trader with experience in the selection and development of acreage, active, energetic, loyal, reliable, with unblemished record for integrity. Address, giving full record of business, personal history and salary requirements with references. Replies will be regarded as confidential. **0182.**

Experienced, honest-to-goodness, hard-hitting gas range **salesmen** for Metropolitan New York, New Jersey and the New England Territory. **0183.**

Three **technical graduates,** between 28 and 40, with experience in modern gas plant practice and accustomed to handling men. Southern location. Salary up to $300 per month. **0184.**

District Manager (30 to 35) for gas company serving between 7,000 and 8,000 meters. Should be thoroughly experienced in new business and public relations activities; technical training and familiarity with production, distribution and utilization desirable. Interview can be arranged at A. G. A. Convention if desired. **0185.**

Up-to-date, technically sound, well educated **gas engineer,** with 10 to 25 years experience in cities of 100,000 to 500,000 population in responsible managerial position; sound understanding necessary of the economics of different processes and available raw materials, unit costs of manufacture and processes in course of development. Good working knowledge of operating, distribution and utilization desirable but position calls for a technician rather than an operator—a good all-around gas engineer. Interview can be arranged in New York City or at A. G. A. Convention. **0186.**

Experienced **industrial** and **house-heating salesmen** at once for Southern location in natural gas territory; salary and commission basis. **0187.**

Large utility in the South wants Industrial **gas salesman** with experience in power and large heating boiler applications. **0188.**

SERVICES OFFERED

Engineer thoroughly trained in construction, appraisal, depreciation, gasoline absorption and research studies, desires connection where advancement will be earned by productive efforts. Twelve years productive service and experience. **351.**

I WANT A MAN!

This call for service comes to A. G. A. Headquarters by letter, by telegram, by local and long distance telephone and very frequently through personal visits made by executives who have travelled long distances.

The Confidential Classification Records filed with the Employment Bureau are consulted and suitable arrangements are made to put the prospective employer and available executives, engineers, operators and salesmen in touch with one another. This procedure is followed whether or not the applicant has placed an advertisement in these columns.

The placement of an advertisement is a privilege of membership and no charge is made; closing date for copy is the seventh of the month to insure insertion in the next issue.

Consider the effect of a well phrased and neatly typewritten record upon a busy, out-of-town executive, seeking his man from a stack of impersonal, silent but very eloquent records of qualifications, both personal and technical!

Young lady desires change; experieneed secretarial worker in public utility field. Familiar with gas office and show room routine and cashier's duties. Excellent references. **352.**

Practical distribution and complaint man (32) experienced in the installation and servicing of domestic, commercial, and industrial equipment. Would consider foreign service; speaks German. **353.**

Industrial gas engineer now with company operating in several cities, desires change; competitive fuels experience. **354.**

Accountant, 28, college education. Four years experience in keeping general office books for companies engaged in pipe-line construction, and the transmission and distribution of natural gas. Can furnish best of references. Employed at present. Prefers West or Middle West location. **355.**

Engineer, college education, 34 years of age, married, eleven years experience in building and plant construction, distribution system design and operation of gas plants, rate study experience, also some industrial gas sales work, desires position as manager in medium size property or group of properties or assistant manager in larger property. Middle West location preferred. **356.**

Fuel Engineer, (M.S.) eight years sales engineering experience with strong background of diversified, extensive industrial research, able to promote and direct practical testing and development to extend and stabilize the use of natural and the various manufactured gases; familiar with production and distribution; good organizer with analytical ability, now employed, desires new connection. Excellent recommendation. Salary commensurate with qualification and experience. **357.**

Shop foreman, with over twenty years experience in the manufacture of gas, would like position with a small company. Any location. **358**

General manager of three gas companies, 5,500 meters. Twenty-five years experience in the gas business, of an unusually diversified nature and thoroughly capable of taking charge of a large gas utility both from an executive and engineering standpoint. **359.**

Young Engineer, now employed in gas manufacturing, would like to get into Industrial Gas Field. Recent graduate. **360.**

Gas engineer with seven years supervisory experience in distribution, construction and design would like position as distribution superintendent or assistant. Available immediately. **361.**

Superintendent, Assistant, or General Foreman of medium size plant or Master Mechanic of large plant. Twenty-five years experience in coal and water gas manufacture as master mechanic and superintendent. Now employed. Services will be available in one month. **362.**

Executive of proven ability with several million dollar corporations desires position of general manager. Can give satisfactory references regarding character and ability. **363.**

Engineer with technical and practical experience in all branches of gas manufacture desires position. No objection to foreign location. **364.**

Comptroller—Married man 34 years of age with complete knowledge of public utility accounting procedure, seeks new connection as Comptroller, Treasurer, or Office Manager. Seven years experience; past four years as Comptroller and Assistant Treasurer, supervising Accounting Department of well known Holding Company. Wide experience in finance, consolidation, and all phases of General and Commercial Accounting, also the handling of consumers' complaints and collections. Prefer to locate in Metropolitan area, Connecticut or Massachusetts. **365.**

Gas engineer—technical man, experienced in routine operation of coal and water gas plants, expert in operation, distribution, plant design and construcion and familiar with recent methods of production, desires position with operating or engineering company. **366.**

Home Service Director, familiar with every phase of Home Service work; technical knowledge of natural, manufactured and butane gas, as well as all household gas and electrical appliances, desires change of position. Free to travel or settle in any part of the United States. **367.**

Technically trained gas engineer, thoroughly familiar with construction and operation of coal gas production and auxiliary equipment. Fourteen years unusually broad experience in supervision of design and construction; has secured marked reduction in costs. Available for interview at A. G. A. Convention. **368.**

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